ENGINEERING NEWS-RECORD

NOV. 19, 1959

PRICE 50 CENTS

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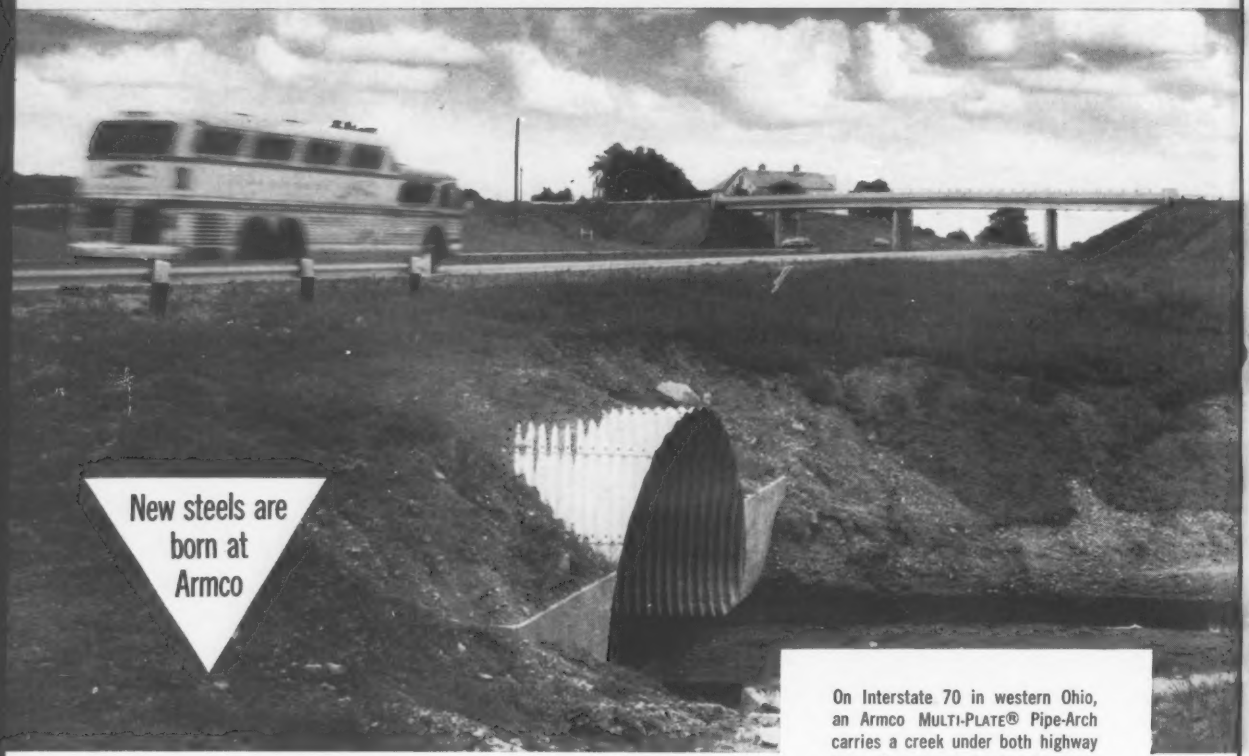
A special report on the new Pittsburgh . . .

Fitting Cities to the Future

A McGRAW-HILL PUBLICATION

Armco Drainage Structures Serve on Many Interstate Highways



On Interstate 70 in western Ohio, an Armco MULTI-PLATE® Pipe-Arch carries a creek under both highway lanes. Corrugated structure has span of 16'7" with a rise of 10'1"; it is 272' long and is skewed with concrete wing walls.

All over the country, from California to Maine, you will see Armco Corrugated Metal Drainage Structures under the new interstate highways.

Why were they installed? Because of their reputation, and because they met specifications of the engineers; because they are economical, and installation is fast and easy.

More than 50 years ago, Armco pioneered corrugated metal drainage structures. Today, many of these early installations are still giving good service. For verification, we suggest you ask your Armco sales representative to show you old Armco installations in your area. Also, you will find he has the necessary engineering background to work with you in solving drainage problems.

For condensed data on Armco drainage products, sizes, loadings and installation tips, send coupon for new 6-page folder. Armco Drainage & Metal Products, Inc., 8109 Curtis Street, Middletown, Ohio.

Send me this folder!

Armco Drainage & Metal Products, Inc.
8109 Curtis Street, Middletown, Ohio.

Name _____

Street _____

City _____ State _____

ARMCO DRAINAGE & METAL PRODUCTS

Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division • Sheffield Division • The National Supply Company • The Armco International Corporation • Union Wire Rope Corporation

Fill Canyon Erosion "Slivers" to Build City within a City

Almost ten years ago, two far-sighted land developers—Louis Burgener and Carlos Tavares—began changing the then barren Clairemont Mesa, seven miles north of the heart of San Diego, California, to a planned village within the city. Today, with the help of Allis-Chalmers construction machines, Clairemont has grown to a city within a city. The present 45 to 50,000 population is expected to reach 70,000 by the end of 1960... eventually will be one of the largest planned communities in the country.

A. H. JOHNSON
Lakeside, California

A. H. Johnson Handling Current Dirt Work

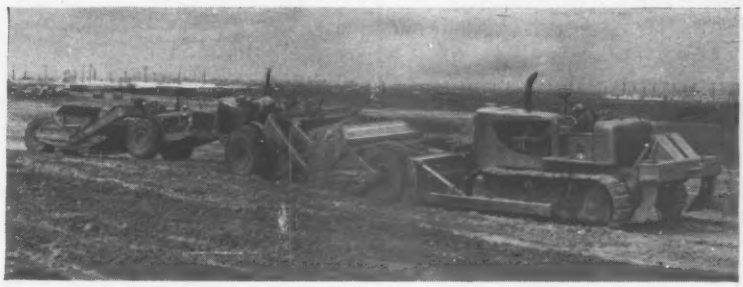
A. H. Johnson, working for prime contractor, R. E. Hazard Contracting Company, is using Allis-Chalmers torque converter crawler tractors and Allis-Chalmers motor scrapers on the rip-cut-fill work to prepare a unit of 100 sites. He is levelling, filling and terracing lots and cutting streets in material that runs from sandy loam to a tough conglomerate of cobblestone and dobe. In the early stages of this unit, the material was so abrasive even the toughest ripper teeth had to be replaced frequently.

Fills Carefully Compacted

Clairemont Mesa is cut by canyons with eroded "slivers" along each side. These slivers are filled and compacted...carefully checked every foot of lift...to create good, stable homesites along trim, scenic canyons.

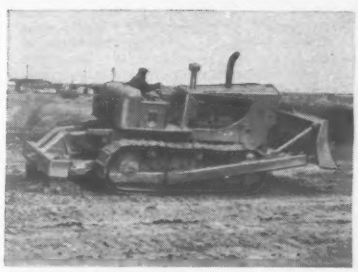
Johnson's Allis-Chalmers torque converter crawlers provided the big power necessary to rip the toughest material on the mesa. They also push-loaded the Allis-Chalmers motor scrapers. Most of Johnson's motor scrapers are hydraulic units which used their double-acting bowl jacks to good advantage biting down into the material and getting loads that paid on every pass. Double-acting bowl jacks are available only on Allis-Chalmers hydraulic motor scrapers.

The fact that Johnson's Allis-Chalmers TS-260 motor scrapers feature 90-degree steering and require less turning area than any make of comparable size (less than 31 feet) was a real timesaver in the close quarters of the numerous sliver fills.



One of Johnson's Allis-Chalmers hydraulic scrapers is push-loaded by a turbocharged HD-21. These scrapers used down pressure and short turning radius to good advantage in the tough material and tight fills.

A. H. Johnson has found . . . as thousands have . . . that Allis-Chalmers construction machinery is designed with the tough jobs in mind. Select the correct units for your next jobs and see them in action. Your Allis-Chalmers construction machinery dealer will arrange the details.



The 225-hp, turbocharged HD-21 rips the cut to speed loading.

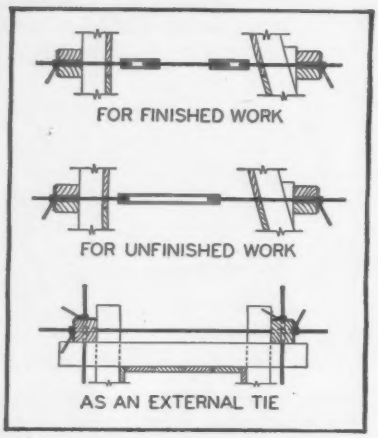
ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

HD-21 with straight dozer **TS-260**

move ahead with **ALLIS-CHALMERS**
...power for a growing world

Easy Form Tying

Multi-purpose Richmond Continuous Threaded Lagstuds eliminate concrete form tying delays



A certain part of concrete form tying work is "special"—governed by conditions which develop as the job progresses. Richmond developed its Continuous Threaded Lagstuds to meet those special conditions and eliminate the need for costly, time consuming delays while "special" tys were built or "special" orders were filled.

Today any foreman, with a supply of Richmond's Continuous Threaded Lagstuds on hand, can have the needed sizes quickly cut to length right at the form.

Continuous Threaded Lagstuds are among the most versatile members of the Richmond Tyscru family. Used alone, or in combination with other Tyscru products, they fill numerous needs. The accompanying diagrams illustrate the adaptability of the Richmond Continuous Threaded Lagstud. They come in ½", ¾", 1" and 1¼" diameters, in 5-ft. and 10-ft. lengths, threaded to fit the contour of the helix coil of the Tyscru. Safe load ratings are equal to those of Tyscrus of the same diameter.

The current Richmond Handbook describes the Richmond Adjustable Tyscru System and the full line of more than 400 Richmond products for the concrete construction industry. For your copy and for help with any specific concreting problem—write to:

INSIST ON RICHMOND AND BE SURE IT'S RICHMOND

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EIGHTY-FIFTH YEAR OF PUBLICATION

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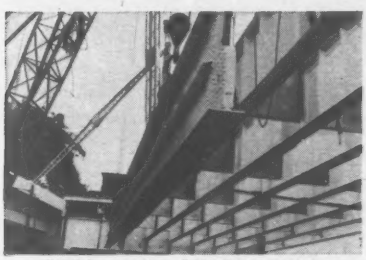
structural steel work

FABRICATED AND ERECTED FOR PITTSBURGH'S PENN-LINCOLN PARKWAY

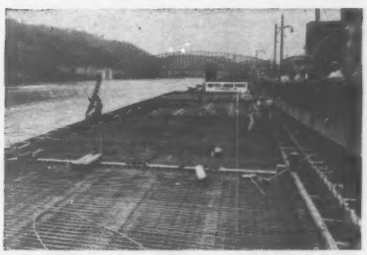
Much of this project was fabricated for erection six months ahead of schedule, despite a severe steel shortage at the time. This reflects Fort Pitt Bridge's modern facilities, skilled personnel and 60-year reputation for prompt handling of urgent requirements.

When planning your next steel structure, consult Fort Pitt Bridge first!

Interchange at 22nd Street Bridge.



Precision erection of 130-foot long girders.



Concrete reinforcing bars by Electric Welding Company, a Fort Pitt Bridge subsidiary.

Bridge crossing Campbell's Run Road on Parkway ten miles west of Pittsburgh.

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For more information, call or write: Asphalt Products, Esso Standard Oil Company, 15 West 51st St., New York 19, N. Y.

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ASPHALT PRODUCTS

In industry after industry..."ESSO RESEARCH works wonders with oil"

B.F.Goodrich

These B.F.Goodrich tires still going strong after 51,456 miles of rugged construction work

WALLACE, KINNEY AND LOCHRIDGE TRUCKING CO. of San Mateo does construction work all over California. Here the job is hauling fill dirt for runway expansion at San Francisco International Airport. Trucks travel both on and off the road carrying loads as heavy as 27 tons.

In spite of these rugged working conditions, the B.F.Goodrich FLEX-RITE NYLON Rock Logger tires above have already given 51,456 miles of service, still have plenty of tread left. The company finds B.F.Goodrich tires can be retreaded 2 and sometimes 3 times!

One reason for this outstanding record is the thick Rock Logger tread that's specially compounded to resist rock cuts and bruises. Another reason is the B.F.Goodrich FLEX-RITE NYLON cord body which withstands double the impact of ordinary cord materials. It resists heat blowouts and flex breaks, too. No wonder B.F.Goodrich FLEX-RITE NYLON cords outwear even extra-thick treads, can be retreaded over and over!

Your B.F.Goodrich Smileage dealer has a money-saving tire for every construction job. See him today. He's listed under Tires in the Yellow Pages of your phone book. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich *truck tires*

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Beautiful **STRAN-STEEL** buildings give you both low-contour styling and color!

When you spot a colorfully modern Stran-Steel pre-engineered structure—you'll know it! From lawn-level to the low roof slope, its functional design is distinctive. Inside, it is wide open from wall to wall, giving you optimum space for material movement and efficient operation. And, sidewalk superintendents will tell you, this colorful building goes up fast . . . usually in weeks, not months.

Protective Stran-Satin Colors—multiple layers of vinyl-aluminum that *cannot* peel or fade—are factory-applied. These handsome colors are available in your choice of six attractive hues: bronze, blue, white, rose, green and gray. All blend well with wood, brick, glass or stone.

You may finance your new Stran-Steel building for one-fourth down on Stran-Steel's five-year purchase plan. For complete information, clip and mail the coupon or call your Stran-Steel dealer today. He's listed in the Yellow Pages under *Steel Buildings* or *Buildings—Steel.*

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Please send complete literature on Commercial and Industrial Buildings in Stran-Satin Color. I'm interested in a building approximately _____ *ft. x* _____ *ft. to be used for* _____

Name _____ Title _____

Company _____ Phone _____

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STRAN-STEEL CORPORATION
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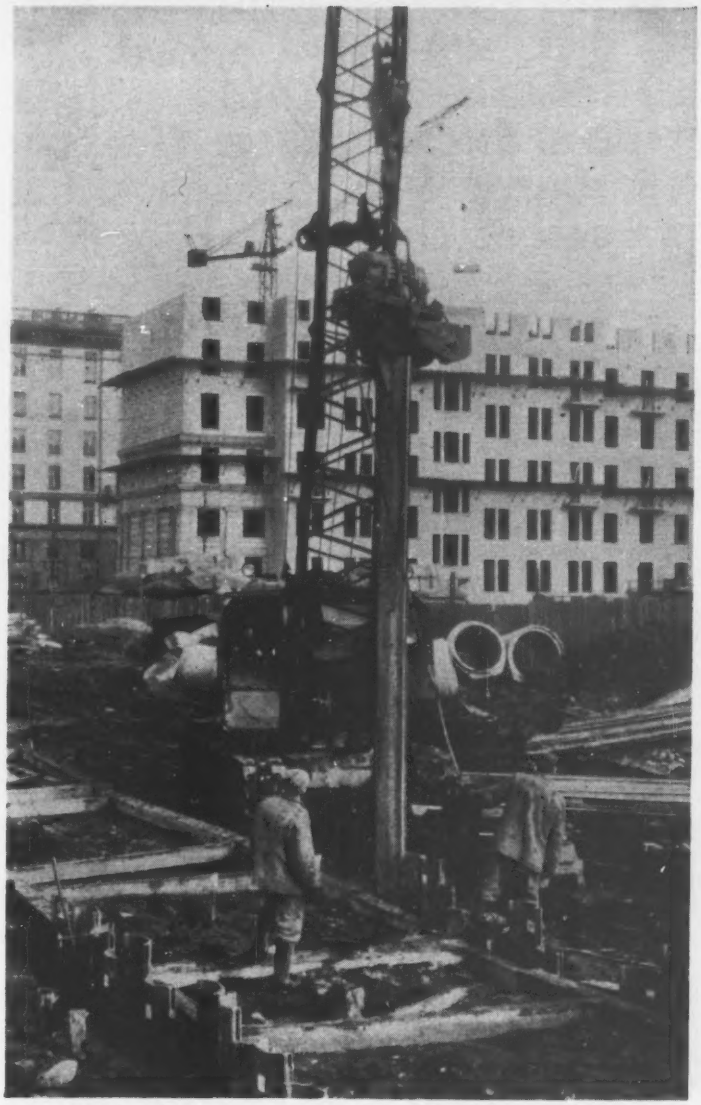
Reader Comment



This vibratory driver is being used on sheetpiles in Leningrad.

Vibrating Pile Drivers in USSR

SIR—A photograph of a hammer pile driving rig taken by Dr. Jacob Feld in the Soviet Union was published by you (ENR Sept. 24, p. 32) with the caption "No vibrating pile drivers" and the added comment: "This rig is the only type I could find. Though vibratory drivers are reportedly in use, no one knew where."

During a visit to the U.S.S.R. as a member of a U.S. soils engineering delegation (Sept. 13-Oct. 4) I saw three different types of vibratory pile and sheetpile drivers. Two types were in action at three different sites, one of which is shown in the accompanying photograph.

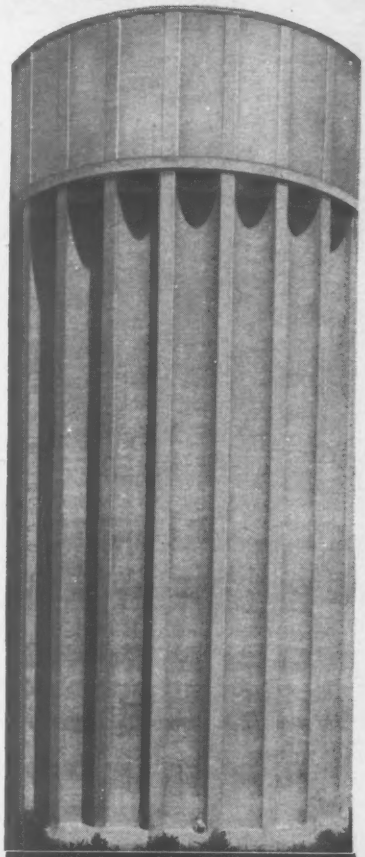
I also saw evidence of previous use of such vibratory drivers at a fourth site—the almost completed Stalingrad dam across the Volga.

Nothing I saw contradicted earlier statements by our Soviet guests and my own on the matter (ENR July 16, p. 53). A formal report on the visit to the U.S.S.R. is being prepared by the delegation for presentation at the January meeting of the Highway Research Board.

GREGORY P. TSCHEBOTARIOFF
Civil Engineering Department
Princeton University
Princeton, N. J.

(*Reader Comment continued p. 16*)

MORE THAN 2000 PRESTRESSED CONCRETE TANKS IN SERVICE



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- Minimum maintenance
- 75% construction cost spent locally
- Satisfied owners
- Longest service life of any tank
- Lowest overall cost

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ALPHA

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

news and notes from the field

MIX WATER CAN BE COSTLY!

Water is used in concrete to lubricate the mix and act chemically with the cement to form the paste which glues the aggregates together. Too much water dilutes the paste and makes it weaker—less solid.

How Much is Too Much?

In a 5-bag concrete mix using about 36 gallons of water per cubic yard—including moisture in the aggregate—only about *half* the water combines with the cement. The rest is a lubricant which eventually causes voids in the concrete. Recommended slumps for different jobs are listed in the table at upper right.

Recommended Slumps for Various Types of Construction*

Type of Construction	Slump, in.**	
	Maximum	Minimum
Reinforced foundation walls and footings, and thin plain walls	5	2
Plain footings, caissons, and substructure walls	4	1
Slabs, beams, and reinforced walls	6	3
Building columns	6	3
Pavements	3	2
Heavy mass construction	3	1

*Adapted from Table 4 of the 1940 Joint Committee "Report on Recommended Practice and Standard Specifications for Concrete and Reinforced Concrete."

**When high-frequency vibrators are used, the values given should be reduced about one-third.

Results of Too Much Water in a Mix

1. Higher labor costs—When workmen have to wait for the mix to stiffen or for excess water to soak into the subgrade or evaporate, overtime costs run high. In cold weather, as much as 6 to 12 hours in extra time can be the result.

2. Excessive bleeding—As concrete bleeds, water comes to the surface. If there is excessive bleeding, the water brings aggregate fines to the surface which often causes dusting and crazing.

3. Sand-streaked walls—Excess water bleeds up the sides of forms, washing out the cement paste leaving a streaked, raw, unattractive wall surface.

4. Segregation—Coarse aggregates settle to the bottom, leaving a weak layer of water and fines on the surface. The lower sections of the concrete often have honeycombed areas because of cement-water paste leaking out of the forms.

5. Excessive cracking—Foundation walls and floors crack excessively from high shrinkage and low tensile strength caused by excessive mixing water.

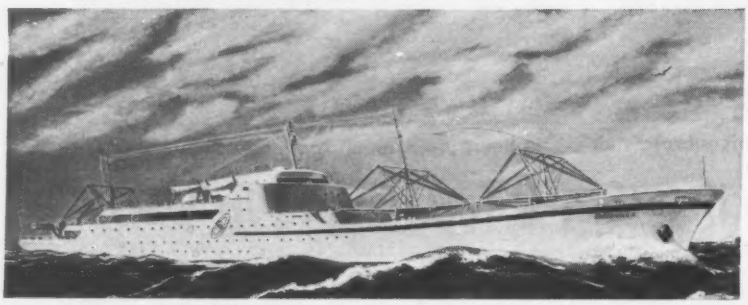
6. Rough surface—It is more difficult to get a smooth surface because deep trowel marks are a common problem in concrete containing excessive amounts of water.

7. Leaky walls and wet floors—Both can result from excessive voids in concrete caused by too much water.

8. Surface scaling—Air is entrained in concrete to protect it from freezing and thawing damage. When the slump is greater than 6 inches, the air content decreases and this important protection is reduced.

Stiff concrete is much less expensive when measured in man hours. It may require more labor initially to get it in place but can be finished sooner . . . your bonus is a satisfied customer—and a good job that will not have to be repaired or replaced.

AN ALPHA EXCLUSIVE



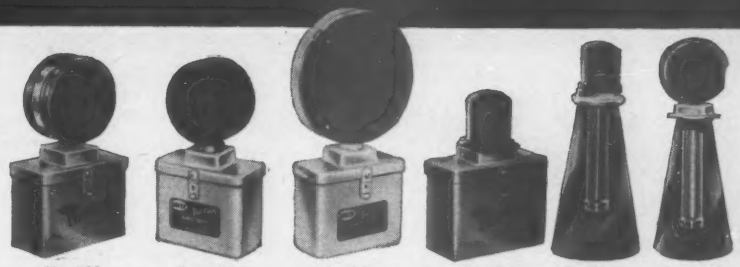
FIRST NUCLEAR POWERED commercial ship, the N. S. Savannah, being built by New York Shipbuilding Corp., Camden, N. J. Alpha cement has been chosen for building the heavy concrete encasement used for the atomic reactor shield. Concrete will weigh 260 lbs. per cu. ft. compared to normal weight of 145 lbs. per cu. ft. Job is continuous pour by pressure or injection grouting, done by Intrusion Prepakt Company of Philadelphia. Alpha cement will be supplied by the Camden Lime Co., Camden, N. J.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building, Easton, Pa.

On YOUR jobs . . . play it SAFE . . . with the DIETZ 3-WAY Hazard Warning System!

Use DIETZ
VISI-FLASH LIGHTS
to alert the oncoming driver:

1



No. 600 | No. 604 | No. 697 | No. 620 | No. 630 | No. 610

Brightest, safest, most trouble-free flashers on the market. Warn: "Danger Ahead."

Use DIETZ
LANTERNS
to locate hazard in relation to the driver's position:

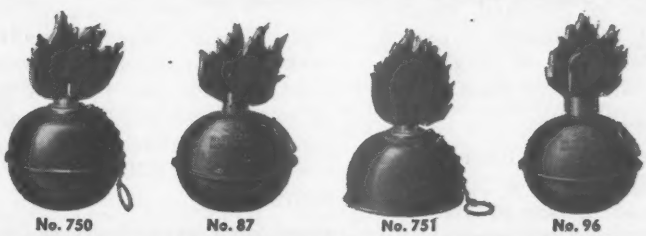
2

No. 1 | No. 8 | No. 100 | No. 40

Show exact location, shape, extent, and boundaries of hazard area. Burn up to 100 hours.

Use DIETZ
TORCHES
to guide driver around the hazard:

3



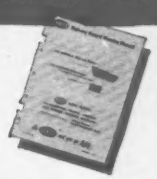
No. 750 | No. 87 | No. 751 | No. 96

Fully illuminate the danger in every weather. Burn up to 48 hours on low cost kerosene.

Go DIETZ and you go Safely

R. E. DIETZ CO.
114 Leavenworth Ave., Syracuse, N. Y.

Please send me a copy of the Hazard Warning Lighting Manual.



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TITLE_____
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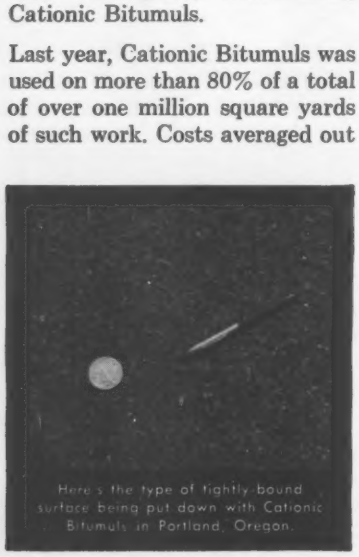
Portland Profits By Resurfacing Streets With CATIONIC BITUMULS

Distributor applies Cationic Bitumuls at 0.2 gal./sq. yd. Note "skirt," designed to protect against drift or splash.

Truck immediately applies 25 lbs. of cover stone (¼"-#10) using tail-gate spreader. Two passes by three-wheel steel roller completes job.

The City of Portland, Oregon, is about to complete its second successful season of Single Surface Treating city streets using Cationic Bitumuls.

Last year, Cationic Bitumuls was used on more than 80% of a total of over one million square yards of such work. Costs averaged out at about 12 cents per sq. yd. as opposed to 16½ cents for similar work using an asphaltic cutback. This year, the program will include at least 800,000 square yards. Conservatively, this means a saving of over **$70,000 in two years!**



Here's the type of tightly-bound surface being put down with Cationic Bitumuls in Portland, Oregon.

WHERE THE ECONOMY DEVELOPS

According to officials in Portland, the savings can be traced to the following factors: less aggregate required; smaller crew; less binder; faster operation.

In addition, Cationic Bitumuls holds even siliceous aggregates. And it extends the working season because it gives extra protection against wash-off of binder when early rain is encountered.

FUTURE PLANS

Current plans call for a continuing program involving the resurfacing of 50 to 60 miles of streets each year. At this rate the City will continue to save approximately $35,000 per year as compared to earlier methods.

Investigate the benefits of using Cationic Bitumuls in your street and road work. Call our nearest office for full information, today. Your community, too, can **profit** just as Portland is doing.

American Bitumuls & Asphalt Company

320 MARKET, SAN FRANCISCO 20, CALIF. · Perth Amboy, N. J. · Baltimore 3, Md. · Cincinnati 38, Ohio · Atlanta 8, Ga. · Mobile, Ala. · St. Louis 17, Mo. · Tucson, Ariz. · Portland 8, Ore. · Oakland 1, Calif. · Inglewood, Calif. · San Juan 23, P. R.

BITUMULS® Emulsified Asphalts • CHEVRON® Paving Asphalts • LAYKOLD® Asphalt Specialties • PETROLASTIC® Industrial Asphalts

INTRODUCING

NEW–IMPROVED

BatchOmatic

AUTOMATIC ASPHALT PLANTS

OUTSTANDING PERFORMANCE, widespread use, and record tonnage production of BatchOmatic plants, of all sizes, have proved their revolutionary principles and features, first introduced in 1955:

First inherently automatic design . . . simultaneous measuring of all aggregate gradations . . . new principle of asphalt measuring . . . pre-set proportions . . . larger screening area, including full deck for fine material, and new adjustable directional throw . . . exclusive material flow selector . . . new Dyna-Mix pugmill for faster mixing, faster discharge . . . fast-stacking, self-contained sections with quick-disconnect couplings . . . and many others.

Now Barber-Greene announces the new BatchOmatic series, incorporating more outstanding advances—improvements based on the experience of all BatchOmatic plants operating on every type of job, producing every type of mix, including the abnormally rigid specs of the AASHO Test Road. These new features and improvements further increase ease and flexibility of operation, and daily tonnage output.

No lost seconds in automatic cycling—Only dry and wet mix cycles are controlled by timers. New sequence-relay system automatically starts each function the *instant* the previous one ends, substantially increasing tonnage.

New electric-over-hydraulic main controls—Controls electrically actuate hydraulic valves located directly on the rams, greatly reducing hydraulic piping, fittings and valves. Simpler construction and maintenance.

25% more weigh-hopper capacity—The unique multiple BatchOmatic weigh-hopper, which permits simultaneous measuring of all gradations, has been enlarged. Adjustable sidewalls are hydraulically controlled separately or simultaneously. Unlimited flexibility for handling all extremities of gradation percentages.

Multiple pre-set mixes—Easily switch to any pre-set mix. Pre-setting is instantly cancelled hydraulically for special mix. Automatic return to pre-set to resume production.

New, faster change of asphalt content—The unique, adjustable suction pipe measuring principle can now be quickly dial-set to the required number of pounds.

New fines control with fast change of proportion—Immediate dial-setting of fines content for any percentage of bulk or bagged mineral filler through new special vane feeder.

Also available with single weigh-hopper and power controls—These power-control towers have most of the BatchOmatic features, including interlocked dry and wet mix timers, and the asphalt measuring system. Available as 2- 3- 4- 5- and 6000-pound plants.

New, improved auxiliary units: New, improved Barber-Greene Dryers, Portable and Stationary Dust Collectors, Aggregate Feed Systems, and completely new Wet Scrubbers further increase production of all asphalt plants.

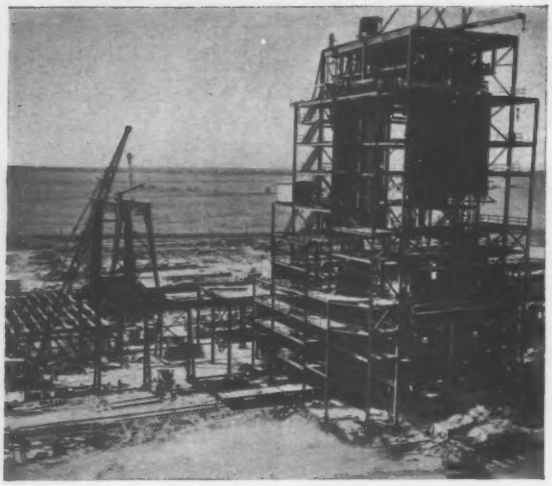
These are just the high spots. Ask for literature on these new advancements.

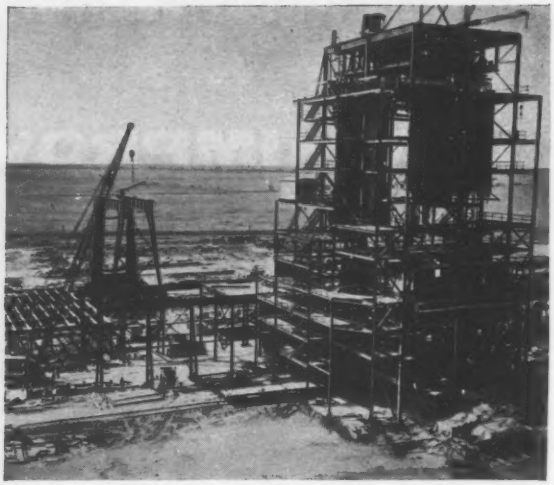
Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

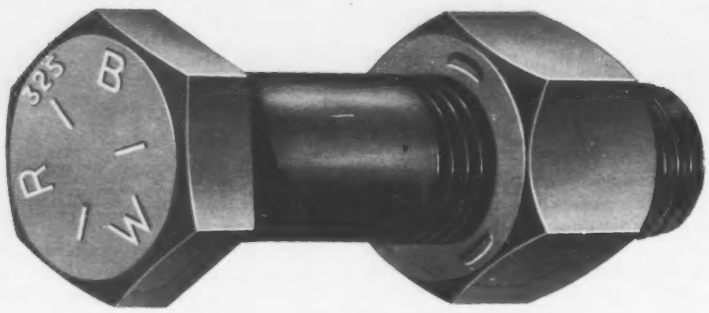
Which of these twins saved erector $3500?





The one erected with

RB&W High Strength Bolts!



A perfect test case—two steam electric stations with *identical* construction except for field erection method. One was riveted, the other was connected with RB&W High Strength Bolts.

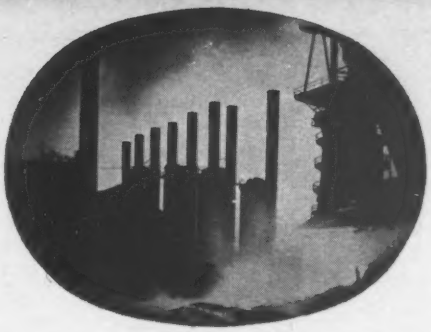
To anyone who has field-erected steel with bolts—as most everybody does these days—the results are a foregone conclusion. Bolting averaged three times faster than riveting. On the bolted job, the erector cut his costs a clean $3500.

What can RB&W High Strength Bolts do for *you?* They can assure you quality that is subjected to constant test and continuous control for conformance to ASTM A325 specification. You get *certification* of physicals and chemical analyses for each size of bolt. You get manufacturing workmanship that your men will especially appreciate when they spin on the nuts and torque up by the latest half-turn method. Send for bulletins that give more details. Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, New York.

R B&W
115th year

Plants at: Port Chester, N.Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco.

LARGEST INDEPENDENT PRODUCER OF HIGH STRENGTH BOLTS FOR CONSTRUCTION

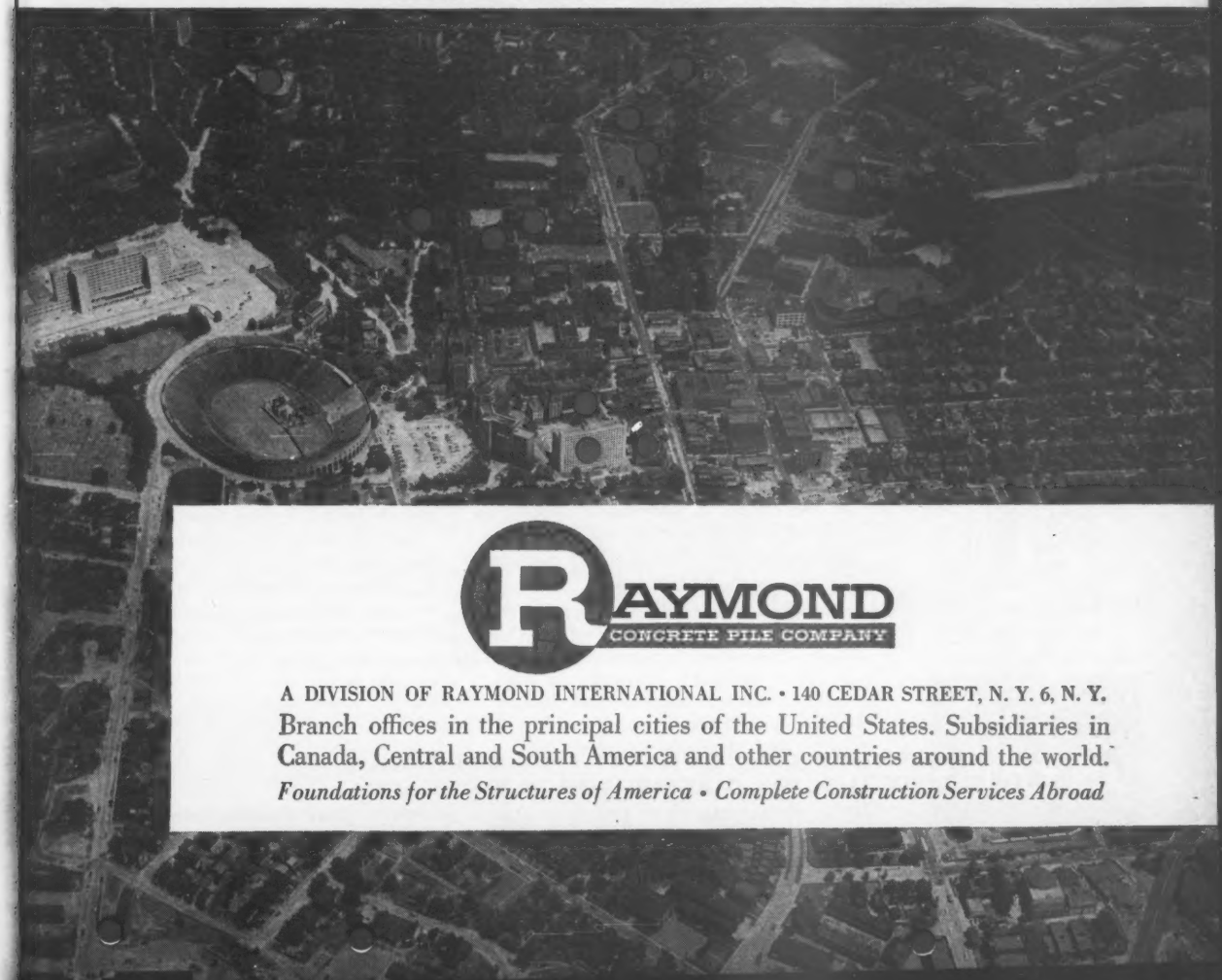
IN  *PITTSBURGH...*

253 STRUCTURES *REST ON* RAYMOND FOUNDATIONS

How many of the Raymond-supported buildings can you identify in the photograph below? If you're at all familiar with the Pittsburgh area, you'll probably recognize Forbes Field, the Carnegie Library, Schenley High School and the Falk Clinic, to mention a few. This situation is not unique to Pittsburgh alone.

In most metropolitan areas across the country the skylines are dotted with Raymond-supported buildings. That's because, for over half a century, engineers, architects and contractors have turned to Raymond for foundation jobs, no matter how large or small. May we be of service to you?

RED DOTS INDICATE STRUCTURES ON RAYMOND FOUNDATIONS

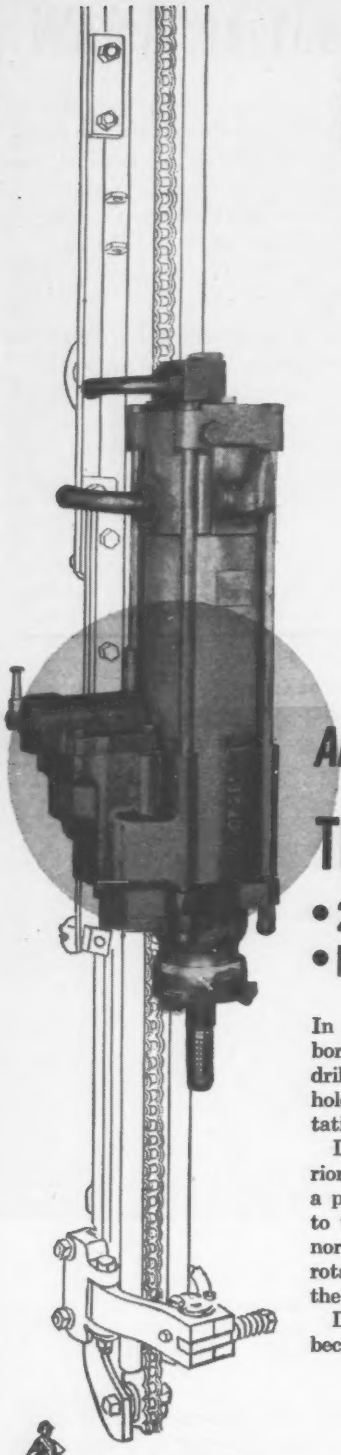


RAYMOND CONCRETE PILE COMPANY

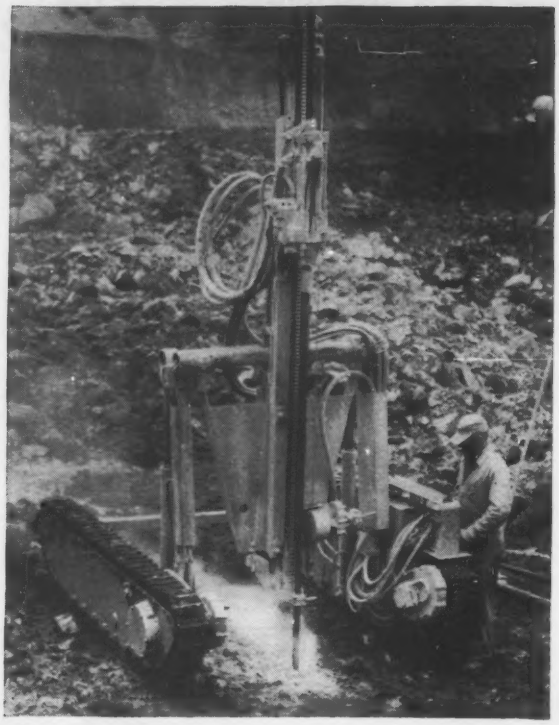
A DIVISION OF RAYMOND INTERNATIONAL INC. • 140 CEDAR STREET, N. Y. 6, N. Y.

Branch offices in the principal cities of the United States. Subsidiaries in Canada, Central and South America and other countries around the world.

Foundations for the Structures of America • Complete Construction Services Abroad



The 450-DR is available on several self-propelled carriers, including the completely automatic TDM Trac-Drill shown at the right.



Another Joy First

The 450 DUAL Rotation Drill

• 25% Higher Drilling Speeds
• Faster Steel Changes

In competitive demonstrations of 4½" bore drills, the new Joy 450-DR not only drilled faster, but also finished blastholes which the conventional reverse rotation machines could not bottom.*

Dual Rotation, which made this superior performance possible, is provided by a powerful vane-type air motor geared to the chuck. It provides a booster to normal drilling rotation, and gives extra rotation power while actually reducing the strain on the rifle bar.

Dual Rotation will also cut your costs because (1) there is no hammering action while coupling or uncoupling—drill steel threads, couplings and striking bars last longer; (2) all four pawls in the 450-DR are used only for forward rotation, not two for drilling and two for reversing—excessive pawl wear is eliminated; and (3) with Dual Rotation, reversing is not rifle bar actuated, therefore rifle nuts cannot back off—less downtime.

Let us prove the superiority of the new Joy 450-DR Drill. Your nearest Joy Office or Distributor will be glad to arrange a demonstration of this remarkable new drill.

C 7877-916

*Competitive test results available upon request.

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA

JOY

Joy Manufacturing Company
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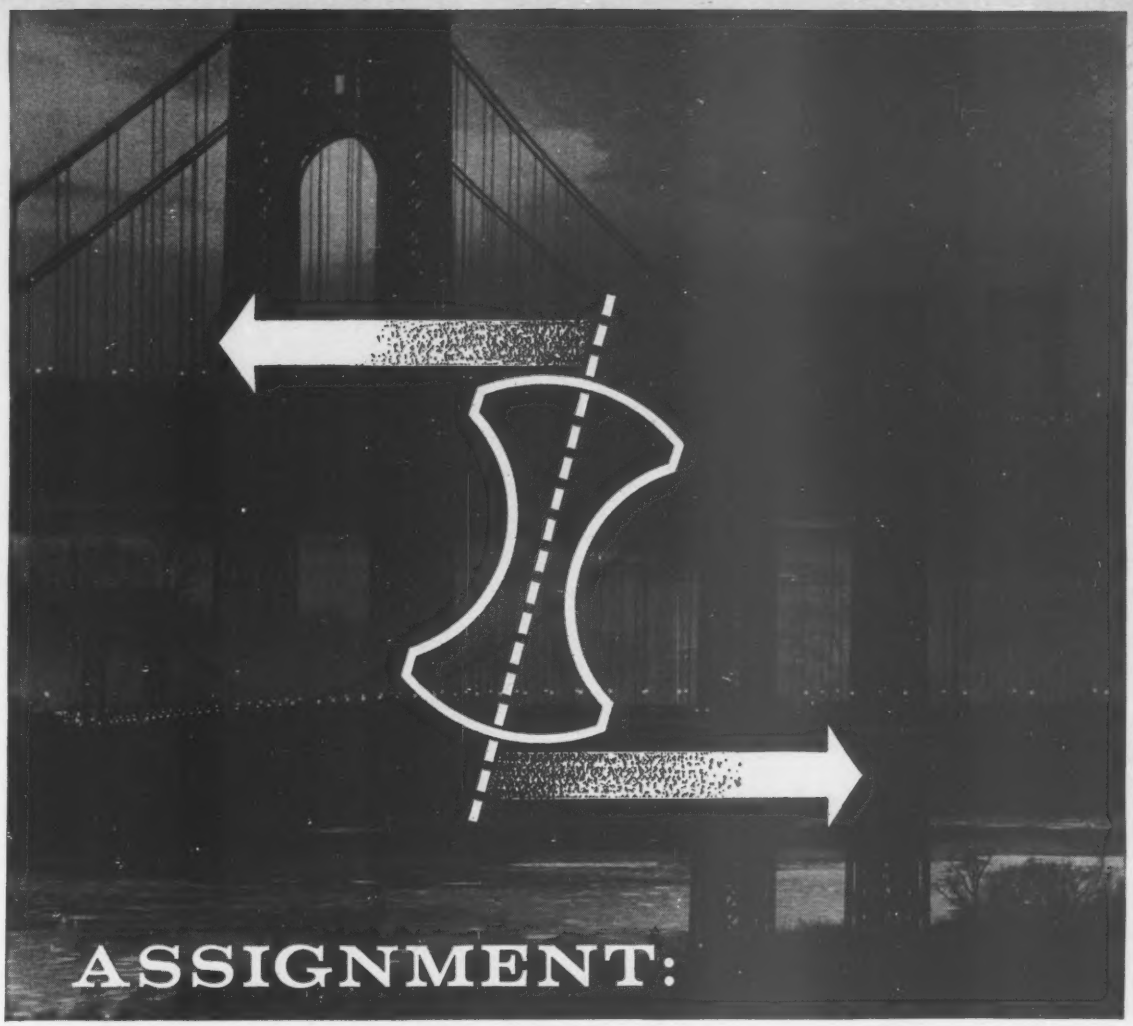
In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario



EXPANSIVITY

How Lukens *Application Research* can help you find the right steel plate for the job

In solving problems of expansivity, the experience of our Application Engineering staff is long and varied. And it's yours for the asking.

For example, a growing number of bridges expand and contract on *bearing plates* of Lukens stainless-clad steel. Extensive research led to the first such application. Tests run jointly with a consulting firm and a large university put Lukens clad steel plate through 2 million passes under a 100,000 pound loading—without harm. There was actually evidence that the bond between the backing steel and its stainless cladding grows stronger.

All the safety factors of corrosion-resistant stainless are present in stainless-clad—at significantly lower cost than 100% high alloy.

Since this initial research, many such bearing plate applications have been made—and their performance compared with that of other materials. Today, The Walt Whitman, Greater New Orleans, Rappahannock River, Throggs Neck, and a number of smaller highway bridges, are cradled on these safe, money-saving plates. The knowledge accumulated by Lukens' Application Engineers in this area and others is available to help guide you in your design problems.

That's why we say, *if your assignment is expansivity, let it be our assignment too.* Contact Manager, Application Engineering, C119 Services Building, Lukens Steel Company, Coatesville, Pa.

ASK FOR THE BULLETIN ON BRIDGE BEARING PLATES

Helping Industry Choose Steels That Fit The Job

LUKENS

ONLY RAMSET

has the exclusive RED TIP fastener

with guaranteed performance

Red Tip fasteners—over 100 threaded studs, drive pins and eye pins—are made to do a *better* fastening job into concrete or steel. Produced from top-quality steel and austempered for extra strength, these fasteners are your best buy for efficient, trouble-free powder-actuated fastening.

Ramset Red Tip fasteners are guaranteed on every approved application! Under Ramset's unique "100-for-100" guarantee, you pay only for the number of fasteners called for on your plans. Insist on the Red Tip fastener . . . call your Ramset dealer today for details—he's listed under "Tools" in the Yellow Pages!

Red Tip serves as guide in barrel of tool, and indicates proper penetration.

In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set® hammer-in tools for light fastening, and Ringblaster® heavy-duty kiln gun.

Ramset® Fastening System

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287-K WINCHESTER AVENUE • NEW HAVEN 4, CONNECTICUT

. . . Reader Comment

How Much Uplift?

SIR—I found the article "Cable-Hung Olympic Roof Spans 300 Ft" (ENR July 30, p. 30) most interesting. But there was no mention of the way the structure will resist wind pressure from the inside of the building. Since, as you say, one end will be left open, I think rather serious uplift forces might come to act on the roof structure. What was the magnitude of the uplift forces considered for the structure?

And what kind of connection was used at the main piers? How were the backleg members connected to the steel box beams?

GEORGES HEGEDUS
Sao Paulo, Brazil

Editor's Note: Here are the answers:

▶ Design of the roof to resist uplift forces was one of the important considerations in the design of this roof structure.

Dead load of the roof is 22 lb per sq ft. For uplift forces above this figure, a sliding connection between the two halfs of the roof (which normally serves to equalize the ridge deflection for unbalanced loading) reaches a stop. After reaching this stop, the roof action is that of a rigid frame with a pin connection at the ridge. The frame has tremendous reserve capacity to resist uplift forces under this condition.

At the main pier connections the columns are boxed with heavy plate. The backleg member is connected rigidly to the boxed column base with high strength bolts; the suspended girder is connected to the box with a simple pin.

CHARLES DEMARIA
Structural Engineer
H. J. Brunnier,
San Francisco, Calif.

Who's 'Ugly'?

SIR—In an article entitled "College Offers Overseas Training" (ENR Aug. 27, p. 32), you maligned the ugly American.

For an engineering magazine, you should be the last to say anything against this character, as he was an engineer. The ugly American was one of the most dedicated persons portrayed in the book of the same name.

I hope that all American engineers in overseas posts are as concerned with the welfare of others as was this one.

D. H. MORRISON
Bronxville, N. Y.

Editor's Note: Reader Morrison is right since an engineer was one of the characters in the book, "The Ugly American," credited with doing a good job.

(Reader Comment continued p. 19)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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Products and people, dependably serving every water and gas distribution system — for over a century!

Supplying a constant flow of water and gas to your home or your industry requires highly specialized tools and equipment.

For example, this Mueller automatic drilling machine is used to drill into mains to make new connections and to add valves while the main is under pressure — *without shutting off the flow of water or gas.* The operator needs only to check the visual indicators to see how the automatic cut is progressing.

Today, because of the dependable performance of the thousands of products developed by Mueller people for the water and gas industries, the constant, safe control of gas and water is taken for granted.

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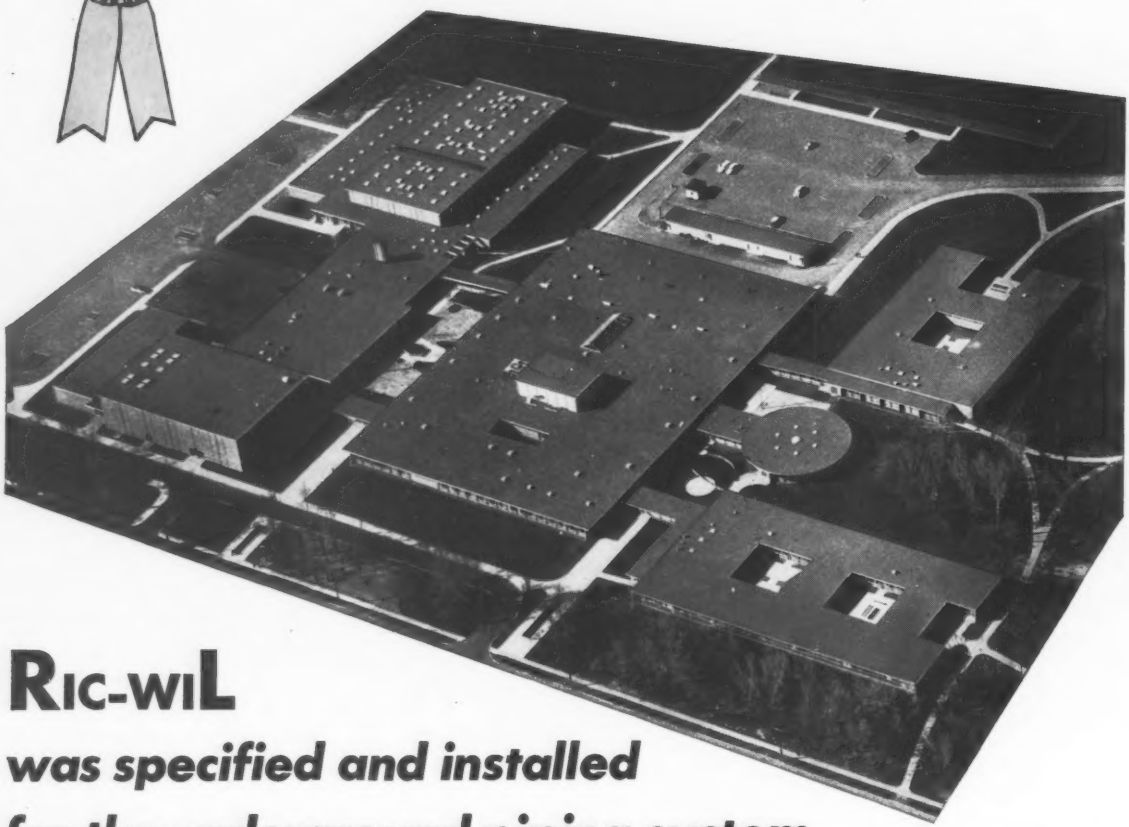
Since 1857

CL-12 Drilling Machine for cuts from 2" to 12"

at Award Winning Linton High School...*



RIC-WIL
was specified and installed for the underground piping system

Architects: Perkins and Will; Ryder & Link
Consulting Engineer: E. R. Gritschke
Contractor: Tougher Plumbing & Heating Co.

RIC-WIL is indeed proud to be a part of the Linton High School Project. All of the firms participating in the annual awards are to be congratulated and encouraged in promoting better design of educational buildings. For over 49 years RIC-WIL has supplied the distribution piping systems for educational buildings through the United States, Canada and many foreign countries. These piping systems have proved to be the finest in Thermal efficiency and mechanical strength. Complete information is available on the many types of systems. Write, wire or phone for literature.

*** School Executive and Educational Business Magazines annual award for Architectural and Engineering excellence. Linton High School, Schenectady, New York.**

See our catalog in Sweets

Quality Piping Systems . . .
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RIC-WIL PREFABRICATED INSULATED PIPING SYSTEMS

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When Concurrency Is Needed

SIR—In the last two paragraphs of your editorial, "The Concept of Concurrency" (ENR Sept. 17, p. 324), you comment on the plan-design-specify-construct system, stating that "it is the normal owner-engineer-contractor relationship of our industry." That is correct for public work, but not a norm for private work.

I agree that wherever possible it is wise for the owner, architect, contractor team to take time to properly plan a project or development. But there are many times, particularly when there is an emergency, when the concept of concurrency is needed and is of great importance.

It is my belief that most of the finest and best buildings constructed in this country are performed under a negotiated contract—usually the contractor is retained on a professional basis at the same time or shortly after the selection of the architect-engineer. The team of owner-architect-contractor is thus formed, and under this system I believe the owner secures more value for his dollar than under what you term "the normal system." For instance, Turner and Fuller are two of the largest building contractors in the country and most of their work is handled on a negotiated selective basis. Most of the leading building contractors around the country perform a great deal of work on the same basis.

I have been urging for years the concept that the building contractor is a construction manager responsible for the over-all construction planning, coordination and completion of each project and that he should be considered on a professional basis. Whether such a contractor actually lays brick or pours concrete is of secondary importance to the proper management and supervision as a whole. While the average contractor may not be staffed to operate on such a basis, I believe that that should be the aim of all those who desire to fill the function of a top grade builder and furnish the best result.

H. C. TURNER, JR.,
President
Turner Construction Co.
New York, N. Y.

Another Type of Radio Telescope

SIR—I would like to call your attention to a different type of radio telescope than the revolving dish type mentioned in your recent article (ENR October 15, p. 40). There are, of course, many types of radio telescopes, but we believe the one we have designed is unique in the amount of area of the reflecting surface, and the low cost to the taxpayers.

This telescope is being constructed near Danville, Ill., by the University of Illinois in cooperation with the Office of Naval Research. The instrument has a fixed parabolic cylindrical reflecting surface 400 ft wide, 65 ft deep, and 600 ft long. The axis of the reflecting surface lies along a north-south line. The focal length of the parabola is approximately 155 ft.

Receiving antenna elements will be supported along 435 ft of the focal line. The antenna elements will be supported from three timber trusses atop four guyed timber towers 165 ft high and 150 ft c-c. The width of the entire timber structure was held to 4 ft, 6 in. and to satisfy electrical requirements non-metalic bolts were used in tower connections.

This instrument is not steerable, but will utilize the fact that the rotation of the earth will bring the object to be studied over the telescope once each 24 hours. By adjusting the relative electrical phases of the antenna elements it will be possible to swing the antenna beam in the meridian plane. With an effective aperature of 160,000 sq ft, or approximately four acres, this instrument will be considerably more sensitive at a frequency of 600 megacycles than existing instruments.

It is hoped that the instrument will be "on the air" during the summer of 1960. Estimated cost for this project, including the necessary electrical installations, should not exceed $500,000. Chism & Miller, Inc., Springfield, is general contractor for the civil and structural portions of the project.

ROLAND D. COLLINS
Hanson, Collins & Rice
Springfield, Ill

Not Like a Crow's Nest

SIR—Some of us here at the Crow's Nest, Naval ROTC dormitory at the University of Texas, had, or I should say are having, an argument on the following question:

How much does the Empire State Building sway off center-line?

We have varying answers here in Austin, from 1¾ in. to 20 ft. I, personally, am more inclined to believe the 1¾ in., although I was under the impression it was less than this.

ROBERT WOODMAN
Austin, Tex.

Editor's Note: The building itself moves ¼ in. in either direction, a total sway of ½ in. The antenna on top moves 1 in. in either direction, 2 in. in all. And the fellows in the Crow's Nest at U. of T. are not alone in their interest: the Empire State Building's public relations people answer this question as many as 50 times a day.

(*Reader Comment continued p. 30*)

All the wide open beauty of *curtain wall design* ...with none of the *weather sealing problems*

That's what the Air Force wanted for their new Academy and that's what they got with Hornflex Thiokol* LP-32 Sealant.

Hornflex Sealant compresses, stretches and flexes with wall movement—yet keeps a solid weather seal at all temperatures. Bonds lastingly to aluminum, glass, steel, concrete and stone to form a watertight seam that stays put.

Hornflex Sealant also has many uses in swimming pool, highway and bridge construction. Write for free 8-page catalog ENR 5555.

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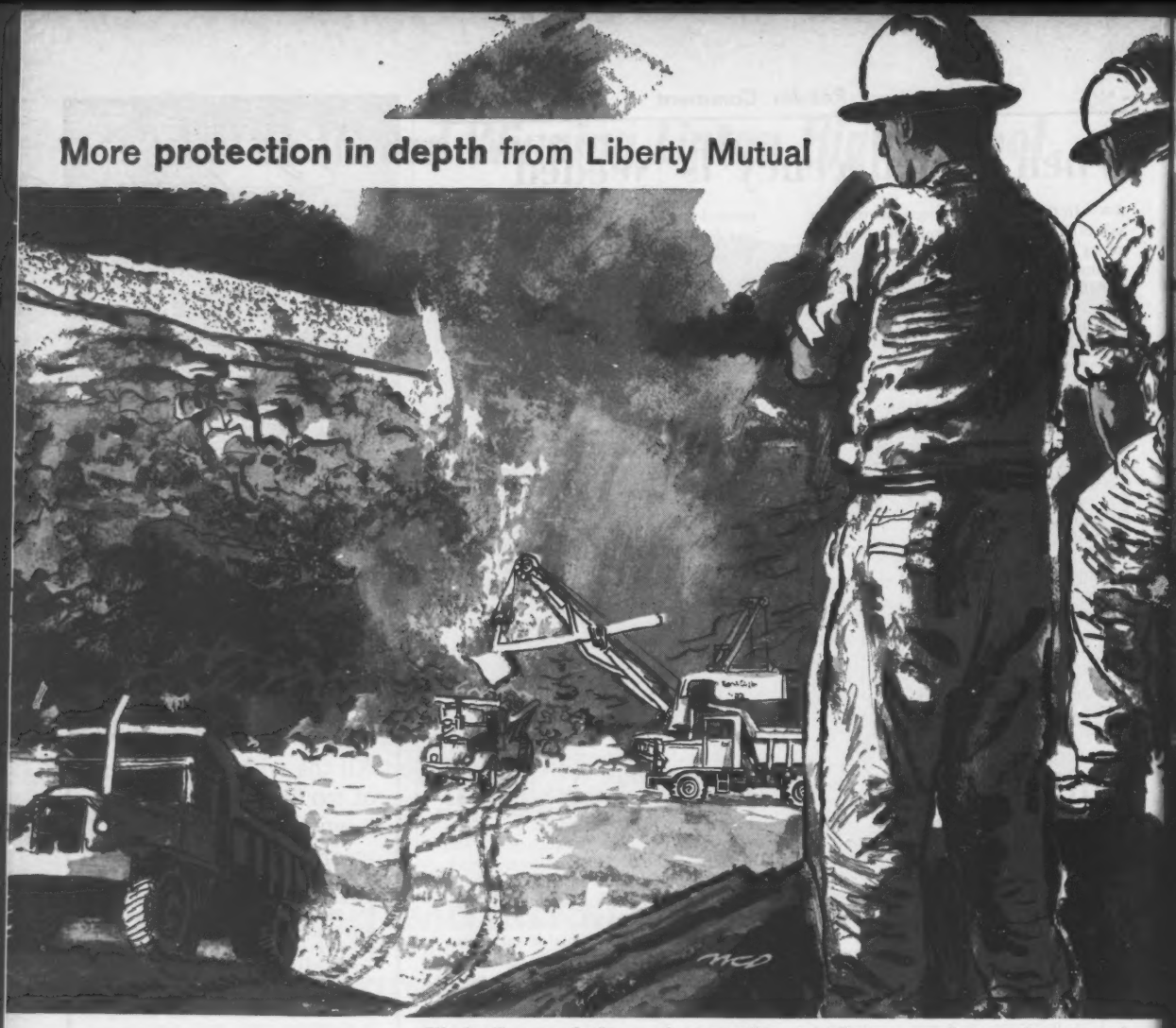
PHOTOS: U. S. AIR FORCE

More protection in depth from Liberty Mutual



Eliminating confusion and congestion is vitally important during rock cutting and removal. Liberty Mutual safety engineers will study your site, help you spot hazards and set up a safe traffic pattern. This service is all a part of protection in depth.

How to keep order down on the floor and cut your compensation costs

A deep cut has long meant danger. When your shovels, dozers and dump trucks must operate in close quarters, extra hazards are created. Injuries, work stoppage and higher insurance costs are often the result.

Today, Liberty Mutual's wealth of knowledge and experience in road-building safety is called on by contractors coast to coast. Construction safety engineers are ready to show you dozens of ways to reduce on-the-job hazards.

This extra service in safeguarding your road gangs is a function of Liberty's protection in depth. From the start of your Liberty coverage, protection in depth helps you avoid accidents and losses, lessens their impact if they happen. This means lower insurance rates, giving you a competitive edge on your job bids.

Protection in depth has helped thousands of Liberty policyholders cut insurance costs through experience modification. To learn how it can help *you*, write or phone your nearest Liberty Mutual office. There are 146 of them located all across the country.

Look for more from

LIBERTY MUTUAL

...the company that stands by you

LIBERTY MUTUAL INSURANCE COMPANY • LIBERTY MUTUAL FIRE INSURANCE COMPANY • HOME OFFICE: BOSTON
Business Insurance: Workmen's Compensation, Liability, Group Accident and Health, Fire, Fleet and Crime
Personal Insurance: Automobile, Fire, Inland Marine, Burglary, Homeowners'

Great new things are shaping up in concrete block

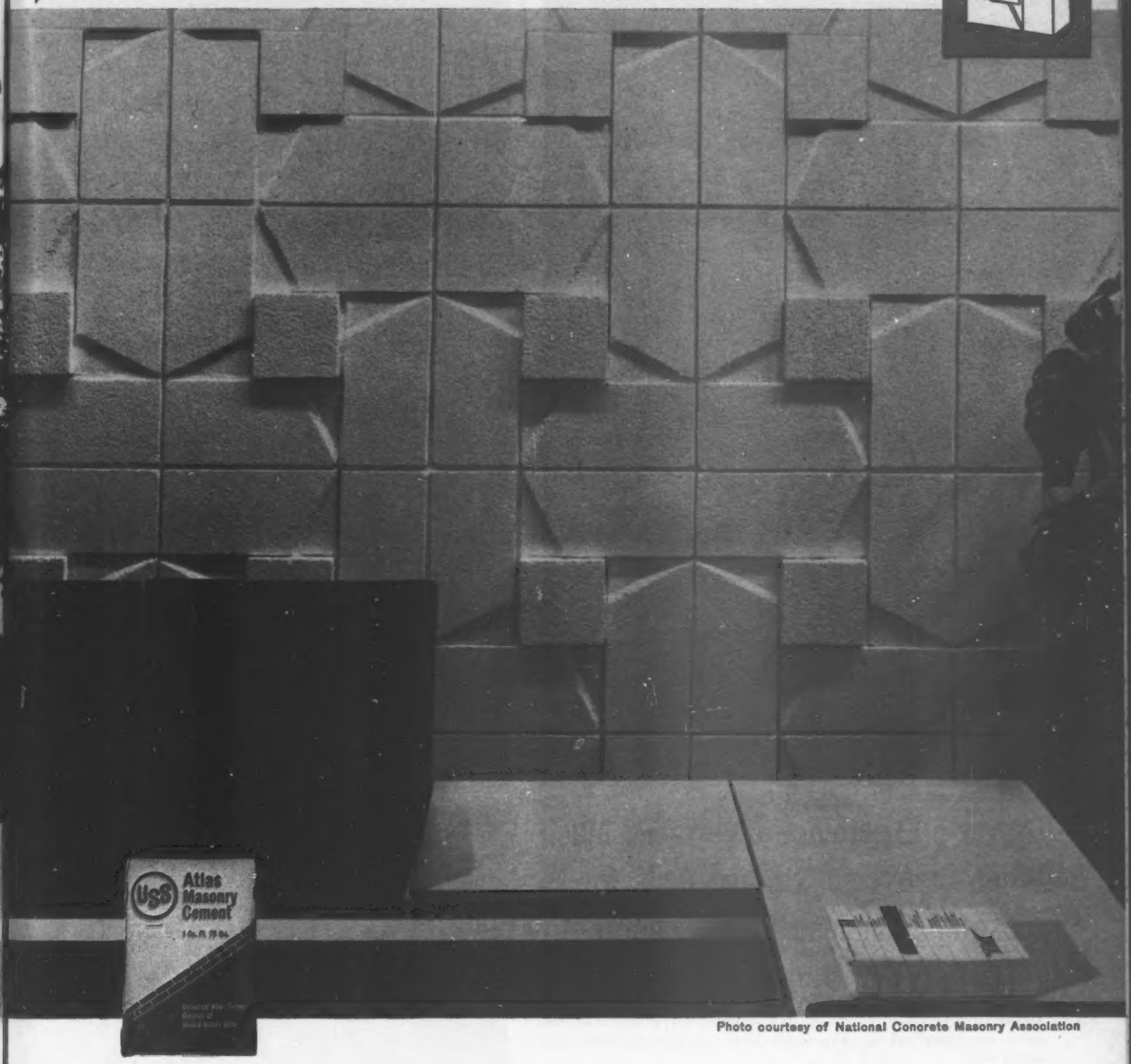


Photo courtesy of National Concrete Masonry Association

Atlas Masonry Cement provides the right mortar

"Shadowal" concrete block has often been described as "the block with a thousand faces." Used here in combination with square blocks by Architect Mario J. Ciampi, San Francisco, this unit has created a striking and distinctive example of the role concrete block plays in today's building plans. And to lay up the new concrete masonry units, Atlas Masonry Cement continues to be the preferred cementing material for mortar. It helps produce a smooth, workable mortar . . . assures a stronger bond . . . gives weatherproof joints that are uniform in color. And Atlas Masonry Cement complies with ASTM and Federal Specifications. For information write: Universal Atlas Cement, Dept. M, 100 Park Avenue, New York 17, N. Y.

Universal Atlas Cement
Division of
United States Steel

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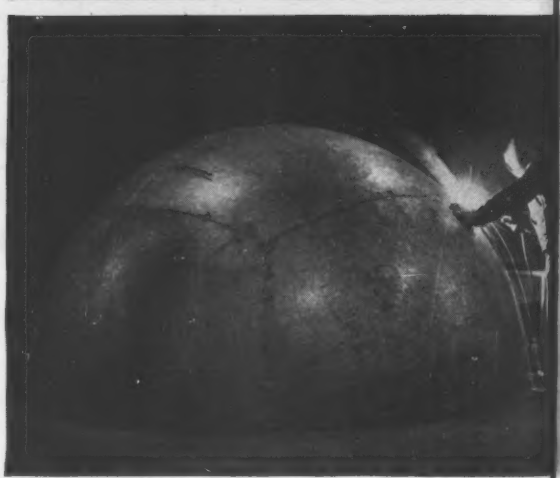

Graver's Experience Counts So Much When Cryogenic Storage Calls for Jacketed Stainless Steel Spheres

A practical and efficient method of storing liquid oxygen at customers' plants was found in 9 ft. double-shell spheres by the Linde Company (Div. of Union Carbide). Type 304 stainless steel was specified for the inner shell, carbon steel for the outer shell.

Keeping oxygen liquid at 297° below zero for prolonged periods required air-tight welding to assure holding a vacuum between the shells where a Linde-patented powder-vacuum insulation is employed.

Graver's quality fabrication and welding skills are called upon regularly to produce cryogenic storage and processing equipment. Graver's extensive knowledge of the field assures the most satisfactory type of equipment for efficient operation and long life.

PIONEERS IN

Plants and Offices Across America

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FABRICATING FOR APPLIED CRYOGENICS

GRAVER TANK & MFG. CO.

DIVISION—UNION TANK CAR COMPANY

EAST CHICAGO, IND.

This Cedarapids CHALLENGER

AVERAGES 500 TONS PER HOUR-

1½" minus material — 35% crushing

Want lowest cost per ton?

buy Cedarapids

Built by IOWA

Specifications for this big highway job in Montana

FOR BASE COURSE	
1½" minus	100%
No. 4 Sieve	25% to 60%
No. 200 Sieve	less than 15%
FOR TYPE "A" TOP COURSE	
¾" Sieve	100%
No. 4 Sieve	40% to 70%
No. 10 Sieve	25% to 55%
No. 200 Sieve	2% to 10%
Dust ratio less than 60% minus 4/10, at least 8%	
FOR COVER MATERIAL	
⅜" Sieve	100%
No. 4 Sieve	9% to 50%
No. 10 Sieve	0% to 8%
No. 200 Sieve	0% to 2%

Here's the plant with the capacity and versatility to handle the big jobs, like Albert Lalonde Co's highway contract near Wolf Point, Montana. The revolutionary Twin Jaw Primary, with 40% to 100% greater capacity than same-size single jaw crushers, makes possible production like Lalonde's 500 tph average . . . or the 640 tons per hour of 1" minus (25% crushing) produced on a recent Arizona highway job! And Challenger versatility permits meeting the toughest specs. You get 1 to 4 sizes, 2" down to ¼" fines . . . 100% fractured material, or blended.

The Cedarapids Challenger is a big producer in every way except in cost. Users of Twin Jaw Crushers consistently report up to 5 times longer jaw life than from single jaw crushers. Think of getting 500 or 600 tons of specification material every hour with less maintenance and operating cost than with most lower capacity plants.

Would you like more information about this single portable plant that gives you tonnages you'd ordinarily need two or more units to get? Send for details or see your Cedarapids Dealer today.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

FIND OUT WHAT
THE CHALLENGER
CAN DO ON YOUR JOB
send the coupon ▶

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa

Gentlemen: Please send Bulletin CH-1, and complete details about the big-capacity Cedarapids Twin Jaw Challenger.

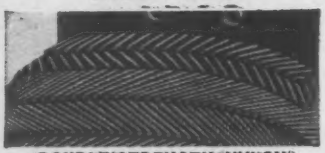
Name_____ Title_____

Company_____

Address_____

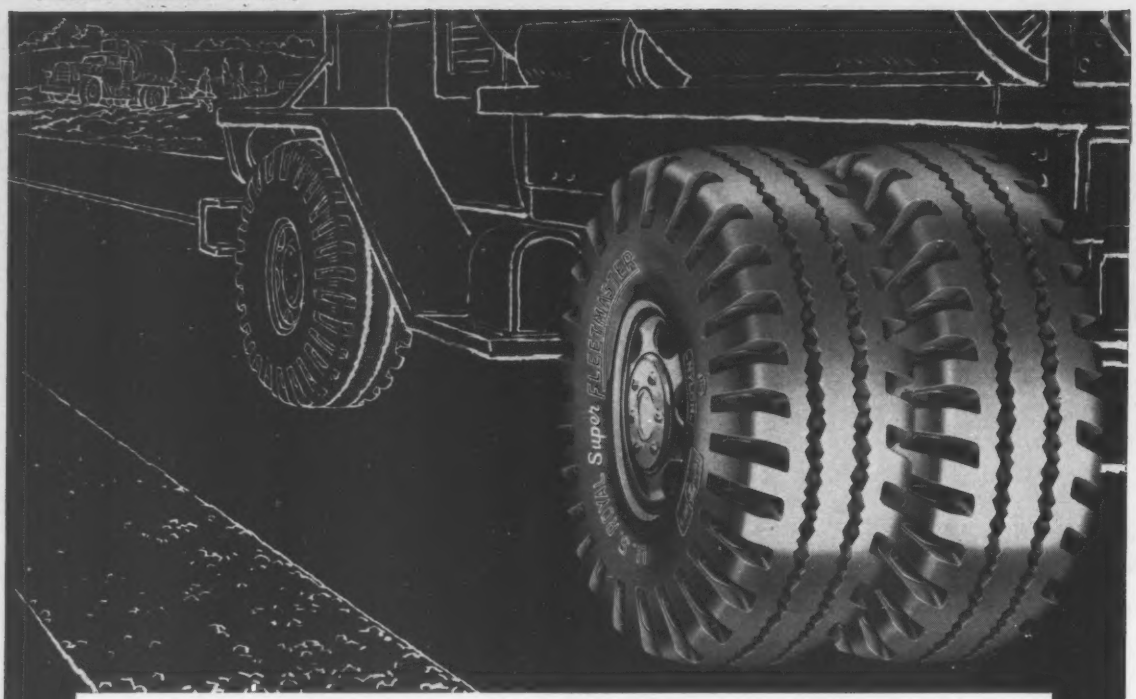
City_____ State_____

(STEEL CABLE)



(DOUBLE-STRENGTH NYLON)

NOW! DOUBLE-ARMORED PROTECTION ENDS COSTLY TIRE REPAIRS!



New U.S. Royal Super Fleetmaster gives unmatched Stamina for Speed on the highway... Brute Strength for off-road impacts!

Now you can travel improved roads at full highway speeds, yet have two-way protection against heavy impacts and cutting in off-road service!

Exclusive "U.S." **Safety Steel Shield** puts two layers of tool-hard steel cables between the tread and cord body—forms an impregnable barrier against ruptures, cutting or penetration. Provides permanent protection during life of original tread and all retreads. **Double-Strength Nylon**... twice as strong as the nylon cord used in ordinary heavy-service tires gives utmost protection against impact breaks and blowouts that result in on-the-job delays.

See it for yourself... call your U.S. Royal Dealer today and test a set of these new U.S. Royal Super Fleetmasters—Nylon and Safety Steel Shield.

U.S. ROYAL SAFETY 1st TRUCK TIRES

US RUBBER **United States Rubber**

ROCKEFELLER CENTER, NEW YORK 20, N.Y.

P. H. "Bud" Mentzer, equipment supervisor, Fisher Contracting Co., Phoenix, Arizona

"...using the FINEST pays off"

"Our reason for using Union's Guardol and T5X Motor oils in 175 major pieces of equipment is simple—it pays off.

"Over the past 7 years that we've been using these Union oils exclusively, we've found them to be the finest in the field. The fact alone that their detergent reserve has enabled us to extend our fleet's overall oil-change interval 50 hours, more than justifies a slight extra cost over ordinary oils."

Add to this the increased overhaul interval and decreased 'down time' which these detergent reserves in Guardol and T5X insure, and you'll see why more and more of the world's most important contractors are specifying Union lubricants exclusively.

UNION OIL COMPANY OF CALIFORNIA 76

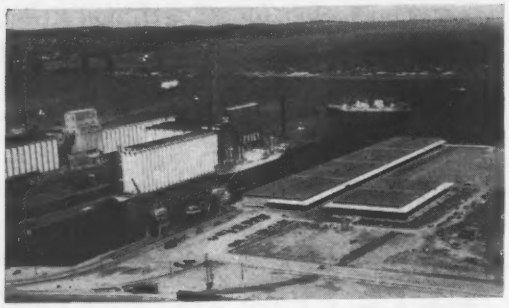
UNION OIL CENTER, LOS ANGELES 17, CALIFORNIA, U. S. A.

Building an "ocean" terminal in Duluth

Sheetpile and earthfill construction are making a 120-acre marine terminal out of a 50-acre peninsula at the Port of Duluth, Minnesota. Duluth-Superior Harbor is the westernmost port of the St. Lawrence Seaway, with the largest volume of cargo of any Great Lakes port. The 10 million dollar marine terminal project will eventually supply berthing space for ten 500-ft ships, with transit sheds, warehouses, and two 90-ton cranes.

A marginal wharf on three sides of the new terminal was constructed by driving some 7,000 tons of Bethlehem Z-piling (section ZP38), in lengths of 58 feet. Dredging alongside this bulkhead provides a water depth of 32 ft, with 8 ft height above water, and 18 ft of penetration in the harbor floor. More than one million cu yd of fill were placed behind the bulkhead, most of it dredged from the harbor channel.

The bulkhead measures 1,600 ft along the north side, 1,700 ft on the south, and 2,700 ft on the east.



Builder of the terminal is the Duluth Port Authority. Contractor for bulkhead and fill is Zenith Dredge Co. of Duluth. Pfeifer & Shultz of Minneapolis are engineers for the project.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

All structural steel in the Perry Street Wharf—shown here under construction—is protected above and below deck level with a Red Lead primer.

RED LEAD Protects New Docks and Warehouses at Port of New Orleans

The busy, historic Port of New Orleans is getting a new look. A bustling complex of eight new wharf and warehouse structures are now completed or under construction.

A Red Lead primer protects all internal and external steel members in these structures against atmospheric corrosion and high moisture conditions. In locations of severe exposure, two finish coats are applied over two primer coats of Red Lead. All interior structural steel gets two coats of Red Lead plus one finish coat.

Red Lead has proved so successful in combating all forms of rust and corrosion that you will find it on bridges, ships and virtually everywhere that steel is exposed to the weather. No other primer equals the low-cost protection given by Red Lead. If you have a problem, our Red Lead specialists will be glad to help you select the best formulation for maximum service and lowest cost. Write today. Lead Industries Association, 60 East 42nd Street, New York 17, N. Y.

LOOK AHEAD WITH LEAD

Projected Golden Triangle development at Pittsburgh, Pa.

MACKS help face-lift the Golden Triangle

In Pittsburgh, they're rebuilding the Golden Triangle. Buildings are going up —hotels, offices, garages . . . tunnels are being bored . . . parks are being developed—all with the help of trucks—and Macks are by far predominant!

Contractors prefer Mack trucks for good reasons. Mack dumpers give rugged service, rock-bottom upkeep and full-time availability. And the exclusive Mack Balanced Bogie with Power Divider provides top-notch tractive ability —power is directed to the axle with the best traction—in difficult footing such as sand, gravel or mud.

Mack ready-mix trucks, powered by famous Mack Thermodyne® diesel engines or economical Mack gasoline engines, give contractors the on-time dependability vital for meeting precise pouring schedules.

Day after day, other Mack trucks and tractors haul without fail the tons of materials and equipment needed on every construction job.

You can benefit by using Mack trucks on your next contract. Your Mack branch or distributor will supply you with the names of Mack users in your field. Compare their operating success with your own . . . you'll hand the tough jobs to Macks. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd., Toronto, Ont.

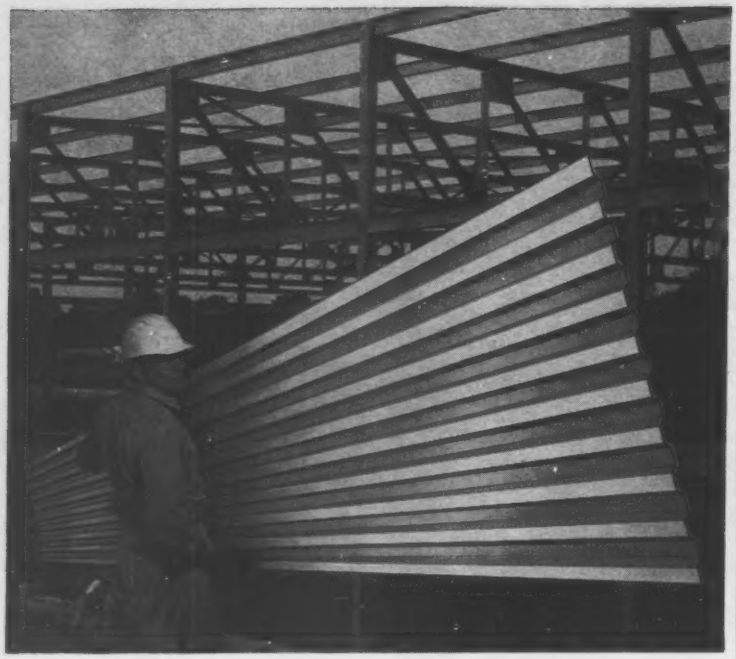
7212

MACK
FIRST NAME FOR
TRUCKS

Yard after yard of ready-mix concrete hauled by Mack trucks is used to build retaining wall at construction site.

Brawny Mack Model B-63SX 47,000 lbs. GVW dumper helps in excavation for Pittsburgh hotel foundation.

Heavy loads meet their match in rugged Mack dumpers, whose quick cycling keeps shovel busy at underground garage project.

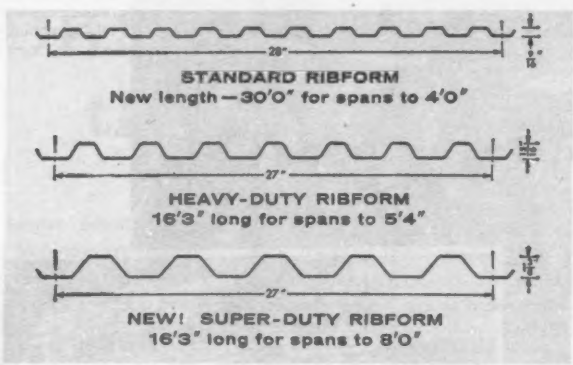


NOW 8-FOOT SPANS

for concrete slabs over Milcor Ribform

New Ribform length for quicker coverage. New super-duty weight for support over longer spans. High-tensile steel sheets, quickly welded to structural supports, provide safe working platform. You use less concrete than for flexible centering — pour and finish in one operation. Especially economical where it is impractical to strip wood forms.

See Sweet's Light Construction File lb/In.



member of the INLAND steel family

MILCOR RIBFORM

INLAND STEEL PRODUCTS COMPANY

DEPT. K, 4147 W. BURNHAM STREET, MILWAUKEE 1, WISCONSIN ATLANTA, BALTIMORE, BUFFALO, CHICAGO, CINCINNATI, CLEVELAND, DALLAS, DETROIT, HAYWARD, (CAL.) KANSAS CITY, LOS ANGELES, MILWAUKEE, NEW ORLEANS, NEW YORK, ST. LOUIS, ST. PAUL, SAN FRANCISCO.

RD-3316

. . . Reader Comment

The Foreign Job Problem

SIR—The editorial (ENR Oct. 15, p. 178) "Help Needed on Foreign Jobs" echoes exactly what we have been preaching in our publication "Scuttlebutts" for a good many months. We have been a little more brutal in the expression of our opinions than you were because we don't honestly believe that foreign work, as a business for American firms and construction men, is in shape to undergo long and painful decimations. The truth of the matter is that foreign work is sick, and in its agony is being treated by witch doctors instead of sound practitioners.

Foreign work for American construction-engineering companies needs a transfusion and that transfusion can only come from our government. After some thirteen years in foreign work the collective opinion of this organization is that our government leaders have made a most pitiful diagnosis of our mutual security program of which foreign aid is a principle segment. I am sure you are aware of the opinion of our most illustrious member, M. Harvey Slocum, that the United States can ultimately lose the cold war to Communism unless something is seriously done about our foreign aid programs.

American firms are not asking for sympathy—they are asking for an opportunity. I make the prediction that unless something serious is done soon about foreign work, within five years the U. S. will have lost completely its world leadership insofar as engineering and construction is concerned.

GEORGE E. FISCHER,
Secretary
Overseas Craftsman's Association
Los Angeles, Calif.

Crane Not All B & W's

SIR—Under a picture of the 400-ton Goliath crane at Hinkley Point nuclear power station (ENR July 23, p. 44), Somerset, England, you say "Babcock & Wilcox designed and built the crane."

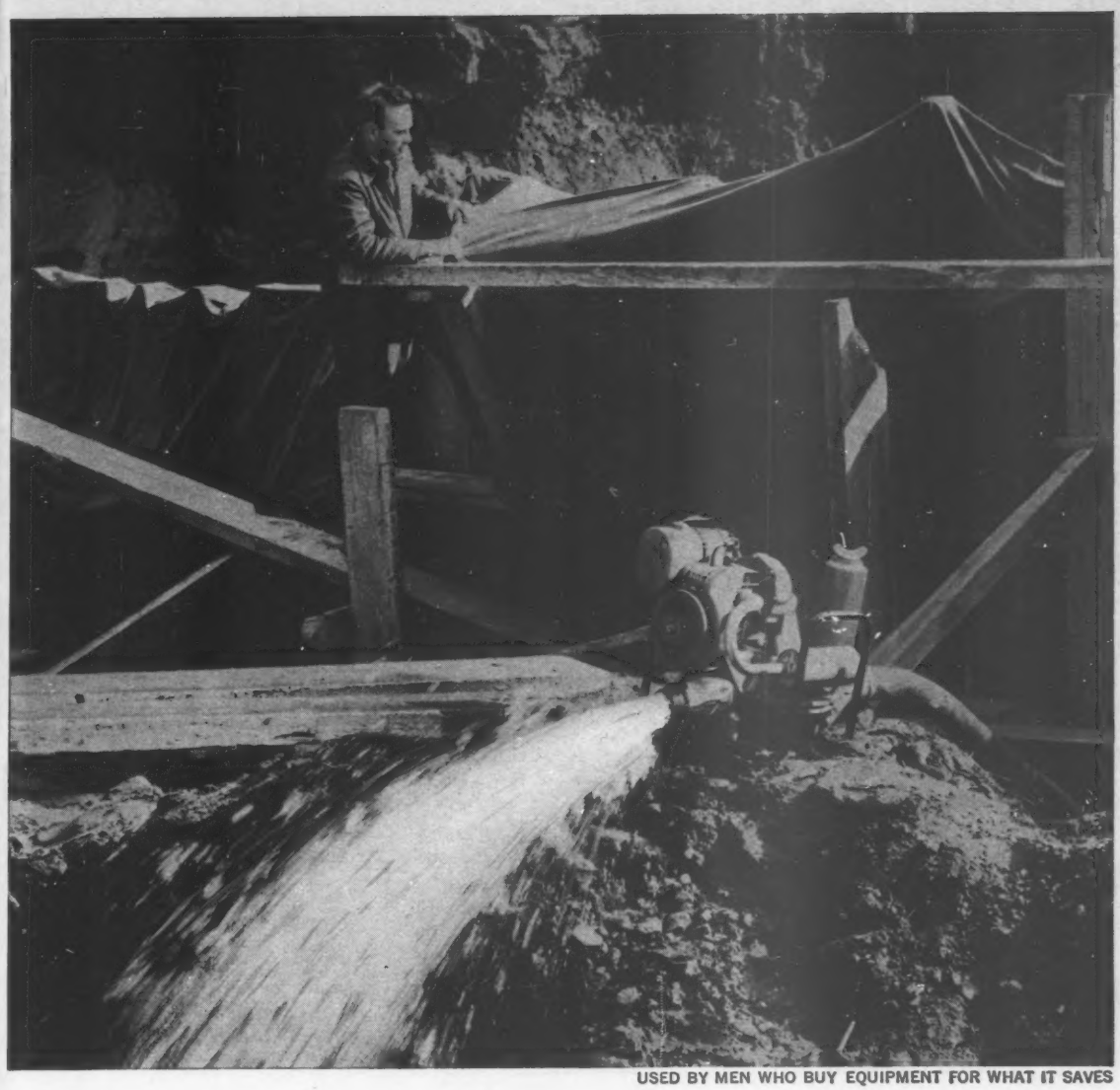
In fact, Babcock & Wilcox retained us to advise on the structural design of the crane. The design shown in the photograph was the outcome of that consultation and was prepared by us.

This structure embodies a number of novel and interesting features compared with orthodox Goliath-type cranes of comparable size. Among them:

- An estimated 45% saving in steel weight.
- Structure breaks down into a small number of large, robust units for ease of dismantling, transportation and re-erection.
- The use of large diameter, high strength longitudinal tension bolts resulting in a total of only 1,200 bolts in all the site connections.

RALPH FREEMAN
Freeman, Fox & Partners
London, England

(Reader Comment continued p. 39)



USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

Easiest Way to do Hardest Pumping

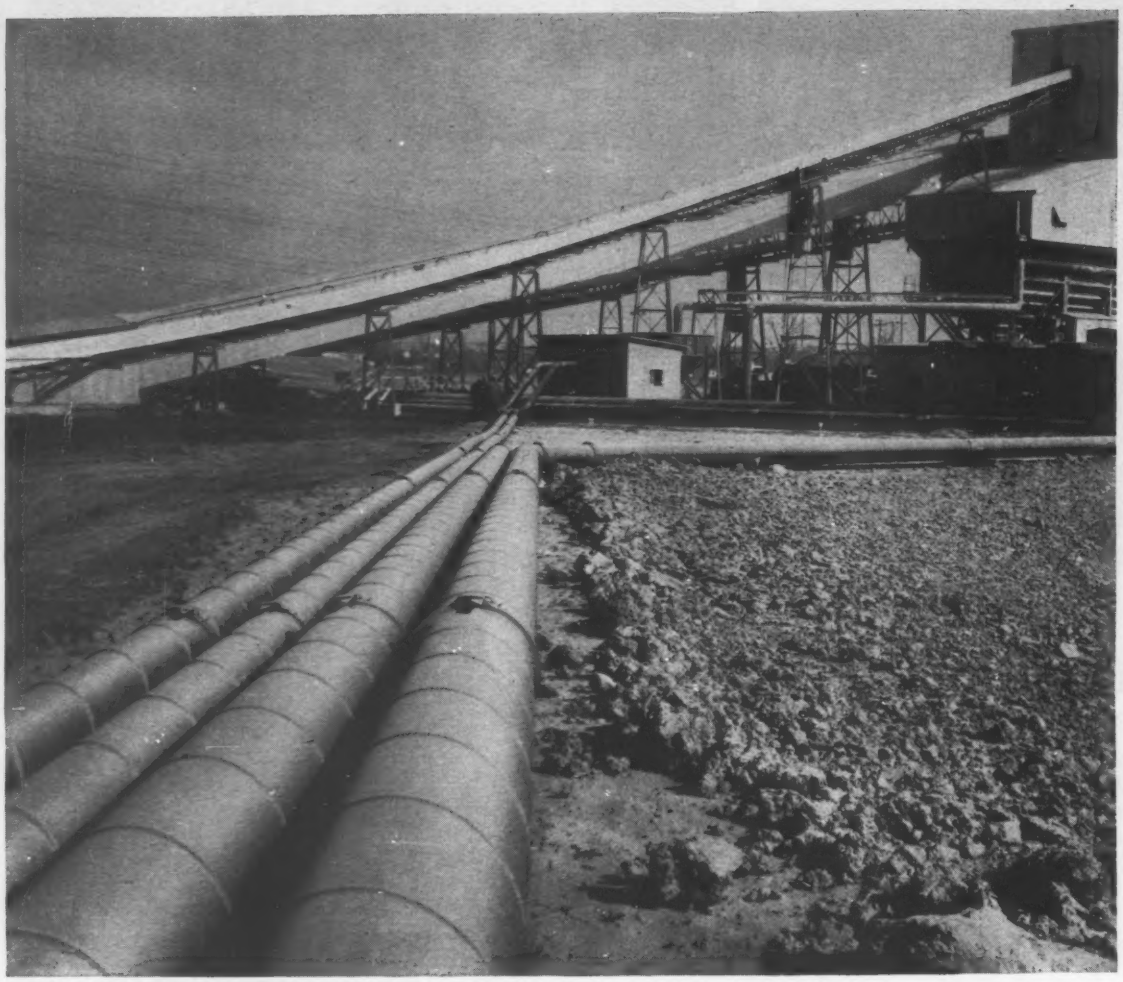
It doesn't matter where you pump or what you pump, the Homelite Diaphragm Pump is the Time-saver and Money-saver for continuous heavy-duty work. Weighs only 120 pounds, complete with Homelite quick-starting engine . . . less than ½ the weight of most diaphragm pumps of equal capacity. You set it up anyplace, fast. You do your pumping, fast. Handles anything . . . water, sand, mud, muck, solids. Manual throttle control adjusts engine speed for full 5,000 G.P.H. capacity pumping or handling small seepage flow . . . gives greater fuel economy. Suction lift of 28 feet is guaranteed. You get total heads up to 50 feet, including friction. Flapper valves have special self-cleaning action to prevent clogging. For longer wear, gears operating in oil are totally enclosed. For steady footing, pump is mounted on vibration-proof spring skids. See it in action today.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE
CARRYABLE
PUMPS GENERATORS • BLOWERS CHAIN SAWS

HOMELITE • A DIVISION OF TEXTRON INC., 1111 RIVERDALE AVE., PORT CHESTER, N.Y.
In Canada — Terry Machinery Co., Ltd.

MAN-SIZE WASHING JOB



Naylor Spiralweld pipe was selected for this unusual project where a large volume of water was required for grading gravel.

With good reason, too. Here is pipe that provides light weight without sacrifice of strength, due to its exclusive spiral-lock-seam structure. It's easier to handle and install—particularly when combined with the one-piece NAYLOR Wedgelock coupling which requires only a hammer to assemble or knock down. This combination adds up to faster installation and all-round economical performance.

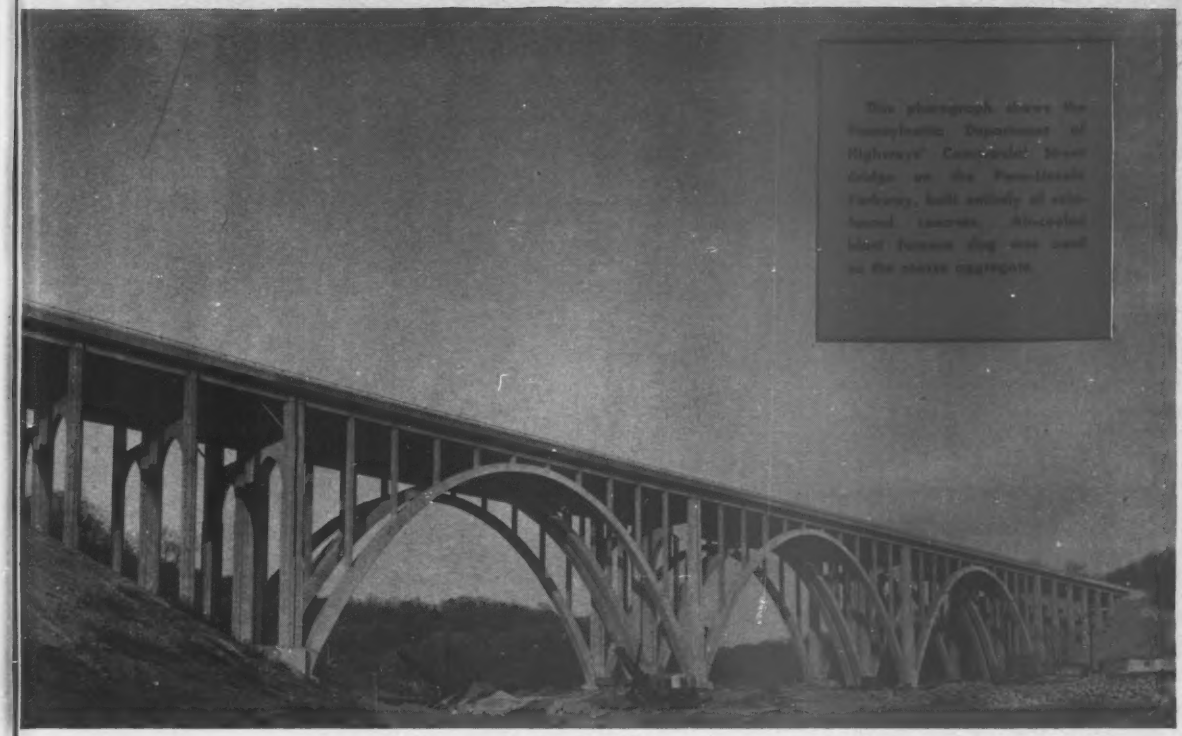
For water, dredging, air or ventilating service, it will pay you to consider these NAYLOR advantages for your lines.

Write for Bulletin No. 59.

NAYLOR PIPE *Company*

1248 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.



BUILDING A GREATER PITTSBURGH WITH BLAST FURNACE SLAG!

Here in Pittsburgh, the "Slag Center" of the world, ***blast furnace slag*** *has been used for over fifty years in ever increasing quantities, and it has played an important role in Pittsburgh's Renaissance. For instance, slag serves as the coarse aggregate in Portland Cement Concrete for magnificent new hospitals, school and office buildings as well as in our new mill buildings, (including heavy machinery and blast furnace foundations) and for concrete roads, bridges and other structures. We are proud that slag was used so extensively in the Allegheny County Sanitary Authority's outstanding sewage treatment plant as well as in the City of Pittsburgh's New Water Clarifier.*

There is scarcely any type of construction in the area that has not employed slag to a considerable extent. The asphaltic concrete used to surface streets, parking areas and lot plan developments all over Western Pennsylvania has required many tons of air-cooled slag aggregate. Many of these slag bituminous surfaces are placed over rolled slag base courses. The railroads serving the area have used thousands of tons of air-cooled slag to ballast their tracks. And planes in Pittsburgh's skies depend upon slag built runways, aprons etc.. at both the Greater Pittsburgh and Allegheny County Municipal Airports.

FOR BEST RESULTS IN YOUR NEXT PROJECT — CALL

DUQUESNE SLAG PRODUCTS CO.

FRICK ANNEX BUILDING **429 FORBES AVENUE**

PITTSBURGH 19, PA.

ATlantic 1-6000

Member, Pennsylvania Slag Association

all-new 365-cfm GYRO-FLO

...a heavy-duty portable compressor with MORE POWER and MORE PERFORMANCE

Ingersoll-Rand, the pioneer builder of portable rotary compressors, now offers a completely new size Gyro-Flo portable—the DR-365. This rugged, all-new compressor provides 365 cfm of mobile air power—16% more than its predecessor, the Gyro-Flo 315. Yet, the DR-365 is no bigger than the 315 cfm Gyro-Flo, and its larger, more powerful engine retains the same 1800 RPM speed.

Take a closer look at what this all-new compressor offers: A new, simplified, more-efficient compressor system with...automatic drainage of oil from cylinders when the unit is shut down...dependable Air-Glide capacity control for 100% stepless regulation...a 12-volt battery system for faster, easier starting... side covers that fold back safely out of the way... a full-length, large capacity tool box to provide extra storage space...all operating controls, fuel tank, filters and tool storage enclosed by lockable side covers. These are just a few of the many features that mean more power, better performance, and greater convenience and safety, too.

The Gyro-Flo 365 is powered by the GM 4-71, 4-cylinder diesel engine. The Gyro-Flo 365 has a heavy-duty, spring-mounted running gear with automotive-type steering—every part built to withstand the hard service encountered on construction jobs. And remember, Ingersoll-Rand's Gyro-Flo line is complete ...six sizes that have become first choice among performance- and economy-minded construction men.

Ask your Ingersoll-Rand representative for complete information or send today for Bulletin 2932.

DIMENSIONS AND WEIGHTS	DR-365 with Diesel Engine
4-WHEEL MOUNTING	
Weight (dry)	5939
Weight (wet)	6640
Length (less drawbar)	10′ x 5¾″
Width	5′ x 8″
Height	6′ x 10½″
Track	56
LESS RUNNING GEAR	
Weight (dry)	5279
Weight (wet)	5980
Length	10′ x 2⅞″
Width	4′ x 9½″
Height	5′ x 2¾″

Ingersoll-Rand
11 Broadway, New York 4, N.Y.

2-959

AN UNBEATABLE COMBINATION...GYRO-FLO COMPRESSORS AND I-R ROCK DRILLS

WHEN CITIES PLAN URBAN RENEWAL

it pays to specify Vitrified Clay Pipe

PITTSBURGH has used miles and miles of Vitrified Clay Pipe in preparing its sanitary system for the bright future that lies ahead of any city willing to stir itself and invest in America's growth and progress. New research-developed, compression joints for Clay Pipe reached the market just in time for many of these far-seeing projects.

Like Pittsburgh, growing communities everywhere need the permanence and safety that only Clay Pipe can provide. Clay Pipe is the only pipe that never wears out . . . does not rust, rot, corrode, or crumble. And with its new research-developed, factory-made compression joints, Clay Pipe is faster and easier to install than ever before.

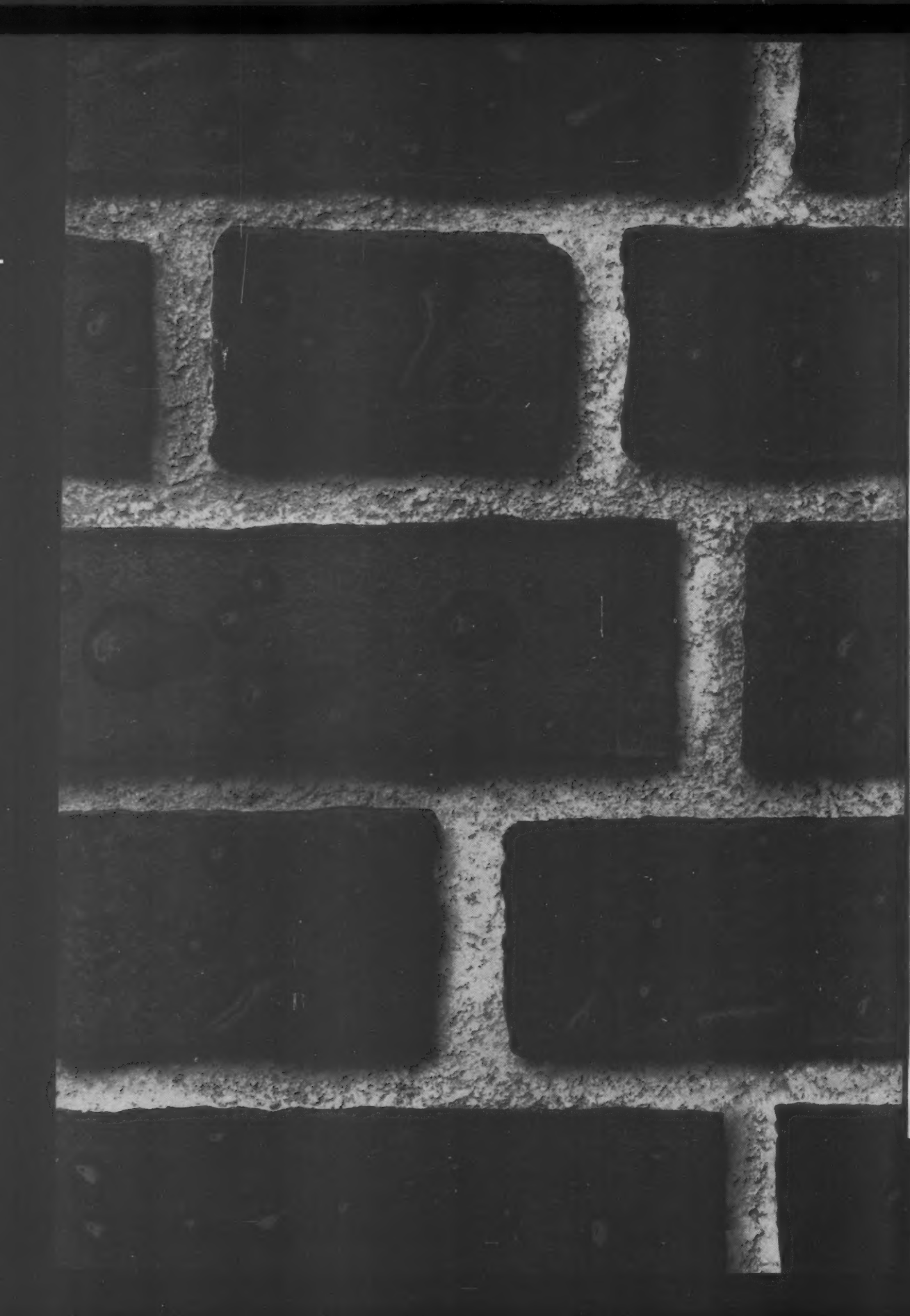
When your community plans new sewerage facilities, be sure to consider the exceptional advantages of Clay Pipe. Its exclusive long-term guarantee is your assurance of permanent, maintenance-free service. Only Clay Pipe has *all* the features you can trust to handle industrial growth and other expansions that go hand in hand with modern cities on the march.

NEW COMPRESSION JOINTS MAKE CLAY PIPE BETTER THAN EVER

C-1053-T45

Vitrified **CLAY PIPE** *Never Wears Out*

NATIONAL CLAY PIPE MANUFACTURERS, INC. 1820 N Street, N. W., Washington 6, D.C.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio • 703 Ninth & Hill Bldg., Los Angeles 15, California • Box 172, Barrington, Illinois • 1401 Peachtree St., N. E., Atlanta 9, Georgia



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-NOTICE-

NOW AVAILABLE—FOR THE FIRST TIME!! A NEW WATER-REPELLENT FOR MASONRY

Wholly different—vastly improved—developed after intensive research.

"ALL-NEW" HYDROCIDE® S-X COLORLESS blended with "HYCON®"

Tests show that "ALL-NEW HYDROCIDE S-X COLORLESS with HYCON® is far more effective than silicone water-repellents previously available—and longer lasting under the severest conditions. This is a Sonneborn exclusive not available elsewhere.

Sonneborn was among the *first* to introduce silicone for masonry water-proofing. Again Sonneborn is the *first* to bring the newest achievement and greatest advance in colorless water-repellents for exterior above-grade masonry.

TO ALL CONTRACTORS AND SONNEBORN DEALERS

We have gone into capacity production with this new product to fill the anticipated demand throughout this country, Canada and South America. If you have not ordered your "ALL-NEW HYDROCIDE S-X with HYCON®, please contact your local Sonneborn representative or write us immediately.

A Product of Sonneborn RESEARCH

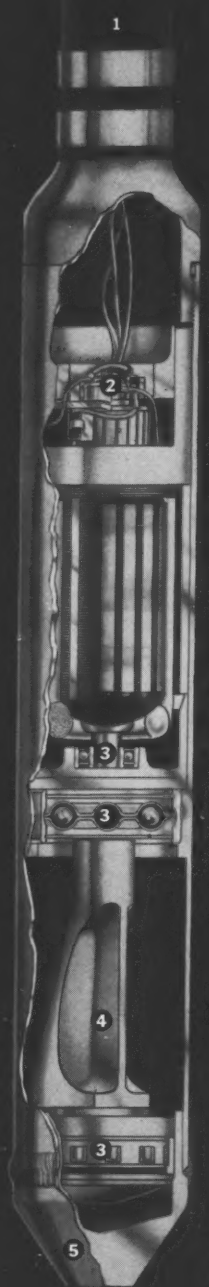
For over 50 years manufacturers of quality building products

L. SONNEBORN SONS, INC., Building Products Division, Dept. 00
404 Park Avenue South, New York 16, N. Y.
HOUSTON • CHICAGO • TORONTO • LOS ANGELES

New Remington Model EV-26 CONCRETE VIBRATOR

Now the world's most reliable, simplest-to-use motor-in-head vibrator and only 2⅝" in diameter

Remington research tackled the problem of developing a truly dependable electric motor-in-head concrete vibrator. After months of development and testing, Remington announces the Model EV-26 with exceptional reliability and capacity for fast work in walls, floors, footings and beams. Plug the new Remington Model EV-26 into any 110-volt line. The powerful motor kicks over at 10,000 vpm. The positive, 2-button switch is waterproof and located conveniently near the operator's hand, while a special thermal overload switch protects against motor burnouts on both AC and DC current. The new Model EV-26 is simple to use in one-man operation and comes in 7′, 14′ or 21′ hose lengths with 25′ of special heavy-duty cord. It's economical to use because second operator isn't necessary to reposition power source to accommodate limited flexible shaft lengths. Mail coupon for complete specifications on the new Model EV-26 and the complete line of Remington concrete vibrators.



1. Heavy-duty, 6-ply hose with anti-slip finish for safe, easy handling. 3-wire cord is anchored inside . . . won't come loose.

2. Welded commutator leads on motor give extra protection during sudden overloads. Thermal-overload protection switch works on AC or DC . . . automatically resets.

3. Heavy-duty, precision ball and roller bearings on motor, shaft and tip keep internal friction down, stand up to heavy vibration loads.

4. Special Remington eccentric throws out 10,000 vpm with an extra-strong kick.

5. Carburized, alloy-steel head with welded tip for long service. Head diameter less than 2⅝" for work in tight spots.

Carries a six-month guarantee.

Remington

Remington Arms Company, Inc., Bridgeport 2, Conn.

IN CANADA: Remington Arms of Canada Limited
36 Queen Elizabeth Blvd., Toronto 18, Ont.

DUPONT

FREE POWER-TOOL CATALOGS

Remington Arms Company, Inc., Bridgeport 2, Conn.

Please send—without obligation—catalogs on Remington Contractor & Industrial Tools check below:

☐ **Concrete Vibrators** ☐ **Air Tools** ☐ **Flexible Shaft Machines**
☐ **Chain Saws** ☐ **Stud Drivers.**

*Name*_____ *Position*_____
*Company*_____
*Address*_____
*City*_____ *Zone*____ *State*_____

Why Not Utility Tunnels?

SIR—I was very much surprised to read the editorial, "Why Not Utility Tunnels?" (ENR Aug 20, p. 132). It appears that no thought had been given to the excessive cost of gas and water installations by placing them in tunnels, nor to the fact that streets would have to be torn up to a greater extent to install a tunnel.

Gas leakage in a tunnel could cause trouble miles from the scene of the actual leakage. The same is true of water leaks. I believe that you would find serious objections from the electric utilities if they were required to place their facilities in the same tunnel with a gas or water main.

Usually only a small percentage of a main has to be exposed for normal maintenance and this usually occurs because of the use of older type joints, such as lead and cement, that do not stand up under the drying effect of natural gas.

In the new subdivisions, gas and water mains are usually installed outside of the paved areas so that paving cuts are confined to sewer installations. In some cases the sewer is stubbed out beyond the paving. Another objection to tunnels would be the difficulty of serving customers from a main encased in a tunnel.

An editorial such as this should have been written by one experienced in utility construction. A more useful editorial would have been to explain to the layman why it is necessary to occasionally make a street opening. If this editorial was written simply to see what kind of replies would be obtained then I think it was in poor taste and not in keeping with the previous high quality of editorials in an otherwise fine magazine.

KENNETH YOUNG
General Superintendent
Engineering and Construction
Metropolitan Utilities District
Omaha, Neb.

Editor's Note: ENR does not reach the layman. It reaches readers like Mr. Young, gives them all the ideas it can and sometimes asks them to exchange their own ideas. Mr. Young's are appreciated.

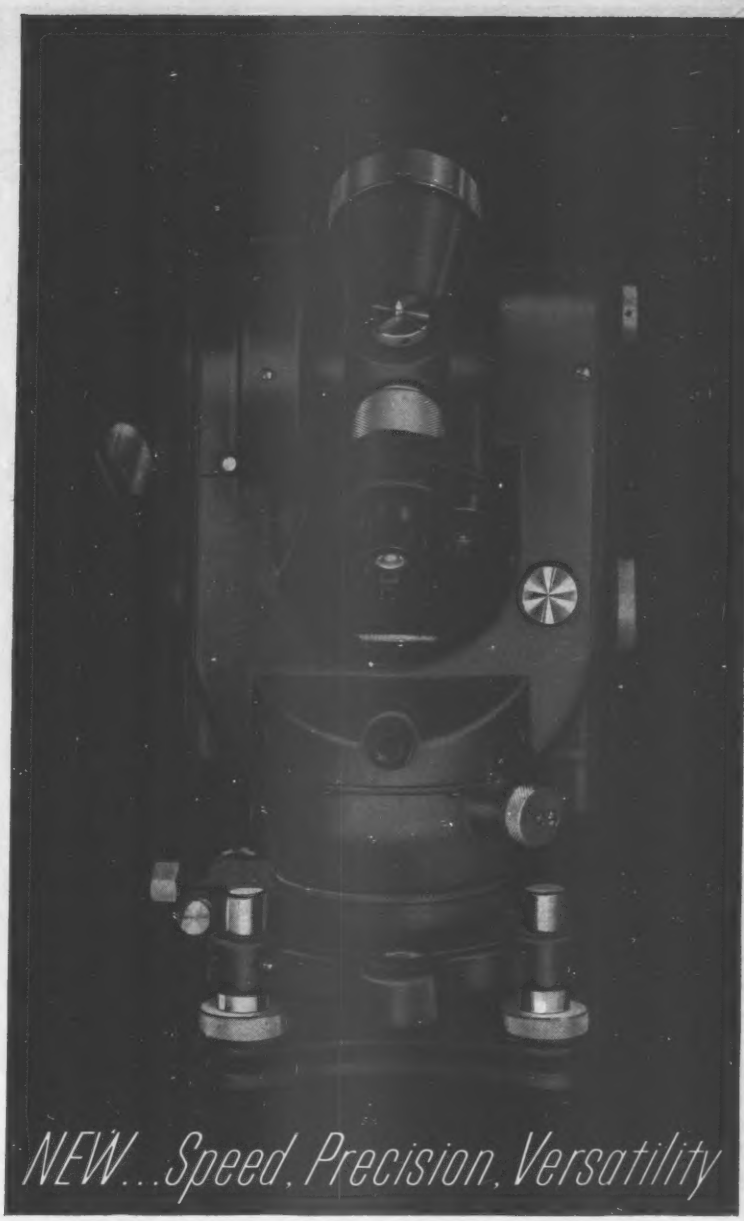
For Your Calendar . . .

Building Research Institute, fall meeting, Shoreham Hotel, Washington, D. C., Nov. 16-19. Write: National Academy of Sciences, 2101 Constitution Ave., Washington 25, D. C.

American Institute of Steel Construction, annual meeting, Boca Raton Club, Boca Raton, Fla., Nov. 30-Dec. 3. Write: L. A. Post, AISC, 101 Park Ave., New York 17, N. Y.

Paper and Paperboard Industrial Waste Conference, Edgewater Beach Hotel, Chicago, Ill. Dec. 1-2. Write: Russell L. Winget, Executive Secretary, National Council for Stream Improvement, Inc., 271 Madison Ave., New York 16, N. Y.

Industrial Uses of Radioisotopes Conference, Detroit, Mich., Dec. 1-2. Write: Harry Richart, Greater Detroit Board of Commerce, 320 West Lafayette St., Detroit 26, Mich.



WILD T-1A OPTICAL REPEATING TRANSIT

All the ruggedness, simplicity, and trouble-free performance of the world renowned T-1...plus the convenience and extra speed of automatic vertical collimation setting.

Vertical angles can be read immediately after set-up. No need to center vertical circle level...no cleaning or maintaining moving parts.

Highway, mining, or any other surveying project, day or underground, becomes routine with the Wild T-1A.

Upper and lower motions for setting on zero and for repeating. Built-in optical plummet.

Write for Wild Booklet T-1A.

In Canada: Wild of Canada Ltd., 157 Maclaren St., Ottawa, Ontario

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INSTRUMENTS, INC.
Sole at Court St. • Port Washington, N.Y. • PO rt Washington 7-4941
FULL FACTORY SERVICES

Horse and buggy transportation in the jet age...

When rapidly increasing population and industrial demands are making water consumption *soar like a jet*, are your water officials forced to go along, horse and buggy fashion, with facilities designed to accommodate a previous generation?

If so, your most immediate needs are new and bigger pipe lines to supplement the old and to replace the obsolete. LOCK JOINT CONCRETE PRESSURE PIPE is the ideal material to implement this important program. Its durability and dependability assure trouble-free service for generations to come. Its initial high carrying capacity is a permanent feature, permitting accurate, long-range estimates of available supply in the distant future.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

WHY IT FAILED—"An act of God" is what a Montreal coroner's jury calls the recent collapse of a concrete roof slab. The finding means, in effect, that responsibility for the death of four workmen in the accident will not be laid to any party involved in the construction of the Johnson & Johnson Ltd. plant addition (ENR Nov. 12, p. 29). However, insurance companies are still investigating to settle the estimated $150,000 damage bill.

ROAD TO HIGHER COSTS—Highway construction costs may go up in Washington State as a result of a state supreme court decision. The court ruled that a property owner is entitled to damages when the state highway department blocks direct access from the property to a main highway.

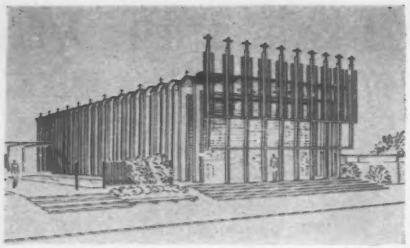
HOUSING CONTINUES DECLINE—Housing starts in October dropped 13% from September to 102,100 units, the U.S. Census Bureau reports. The seasonally adjusted annual rate in October was 1.18 million, 11% below the September rate. A tight money market and the steel strike are responsible for the more-than-seasonal drop, the Bureau says. Housing starts for the first 10 months of '59 are now estimated at 1,356,000, compared to 1,089,000 for the same period in '58.

BRANDED LUMBER—All framing lumber in houses inspected by the Federal Housing Administration will have to be grade marked starting April 1. Grading is now required in only 12 of 75 areas.

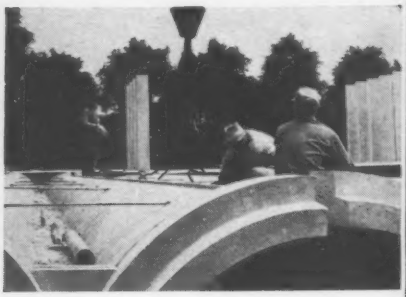
FIFTH TIME A CHARM?—Washington State's Toll Bridge Authority wants to make a fifth economic study of a proposed multimillion-dollar vehicular tunnel through the Cascade Mountains at Naches Pass. Earlier studies indicated the project could not be financed by tolls alone. The Authority will award a $100,000 study contract to Bertram H. Lindman & Associates if the State Highway Commission approves.

BIG SPENDING IN QUEBEC—The Province of Quebec's Hydro-Electric Commission reportedly has begun preliminary clearing for $700 million worth of hydro work on the Manicouagan River. The project will include three dams and powerhouses with a capacity of 4.5 million kw.

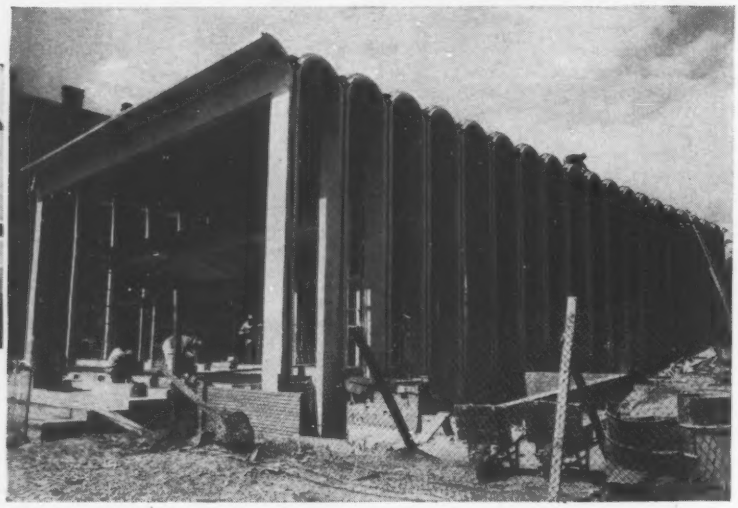
DOUBLE TRAILER TRYOUT—To attract more truck traffic to its 156-mile highway system, Indiana may permit operation of one tractor pulling two trailers. Double trailers are now illegal in the state because they weigh too much and are too long. Indiana won't make any changes unless Ohio does the same thing for its 241-mile turnpike system. The Ohio Turnpike Commission may act on the proposal next month.

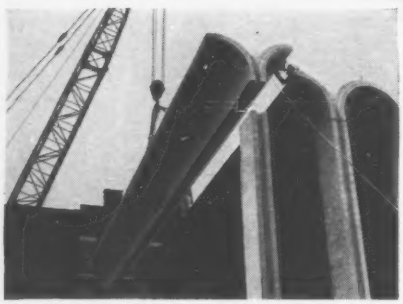


PITTSBURGH CHURCH OF Precast Concrete



The 20 Y-units are 53′ long, have 3″ shells. Vaults have a 27½″ radius and rise to 24′ above floor level, supported on precast columns spaced 5′ 5″ on centers.





HOLY TRINITY GREEK ORTHODOX CHURCH
Pittsburgh, Pa.

Architect: **JAMES A. MITCHELL,** Pittsburgh, Pa.

Consulting Engineer (Structure):
NORMAN K. LONG, Pittsburgh, Pa.

Consulting Engineer (Precast Sections):
CHARLES H. WOLF, Philadelphia, Pa.

General Contractor:
SAMUEL N. ZARPAS, INC., Pittsburgh, Pa.

Precast Columns and Roof Members fabricated by:
FORMIGLI CORPORATION, Berlin, N. J.

● Byzantine architecture has been given an impressive new treatment in Pittsburgh's Holy Trinity Greek Orthodox Church, constructed of precast concrete units.

Although the original design called for monolithic reinforced concrete, the architect and contractor decided to save time with precast units which could be stockpiled during the Winter for rapid erection in warm weather. Precast concrete would provide all the inherent values of reinforced concrete—fire-safety, corrosion-resistance, rot-resistance, low initial cost and maintenance-free service—and in addition, the architect felt, it would also increase the aesthetic acceptability of the structure.

Barrel arches for the nave are comprised of Y-shaped precast units placed alongside each other and supported by precast columns. Lightweight concrete fills the rooftop valleys.

Fabricated nearly 300 miles from Pittsburgh, the units were hauled over the mountains by truck on a tight delivery schedule closely coordinated with construction progress. 'Incor'®—America's *first* high-early strength cement—was used by the precast producer to assure maximum quality in each unit, as well as maximum precasting economy

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WASHINGTON OBSERVER

- Faster U. S. growth needed?
- BMEWS station for England
- Coming: New squeeze on Hoffa

● **Soviet vs. U. S. economic expansion is becoming an issue in next year's Presidential campaign.** The question boils down to this: Should the Administration adopt policies designed to expand the U. S. economy at a faster rate than it is showing now?

Faster expansion would mean more public works construction, more government stimulation of industrial plants and other private construction.

Gov. Nelson Rockefeller, trying to establish himself as a better GOP candidate than Vice President Nixon, says we should try to speed U. S. growth. Mr. Nixon is pretty much stuck with the Eisenhower Administration's policy—which is that fighting inflation is the crucial economic issue, and rate of growth is of much lower priority.

Democratic candidates will belabor the Administration's view that inflation is more important. They're apt to think the threat of Russian economic growth is far greater.

U. S. experts agree the Soviet growth rate is about twice ours—around 6% a year, compared to our 3%. Here are some other comparisons, as reported to the Joint Economic Committee of Congress, which is making an exhaustive analysis of the situation:

Housing: The Soviets are planning to spend about half what's now spent in the U. S.

Electric power: The Russians are already building about as much as we are.

But productivity of the Russian construction worker is only about 60% of his U. S. counterpart.

Many experts feel that the Soviet rate of expansion may slow down soon as the country's industrial plant becomes more modern and the demands of Russian consumers become more important. But even so, the ability of the top leaders to direct their economy means that in heavy industrial output the Russians may be outproducing us by 1970, according to information submitted to the committee.

—

● **The U. S. and Great Britain have reached agreement on construction of a $100-million ballistic missile early warning system** (BMEWS) station near Newcastle, England.

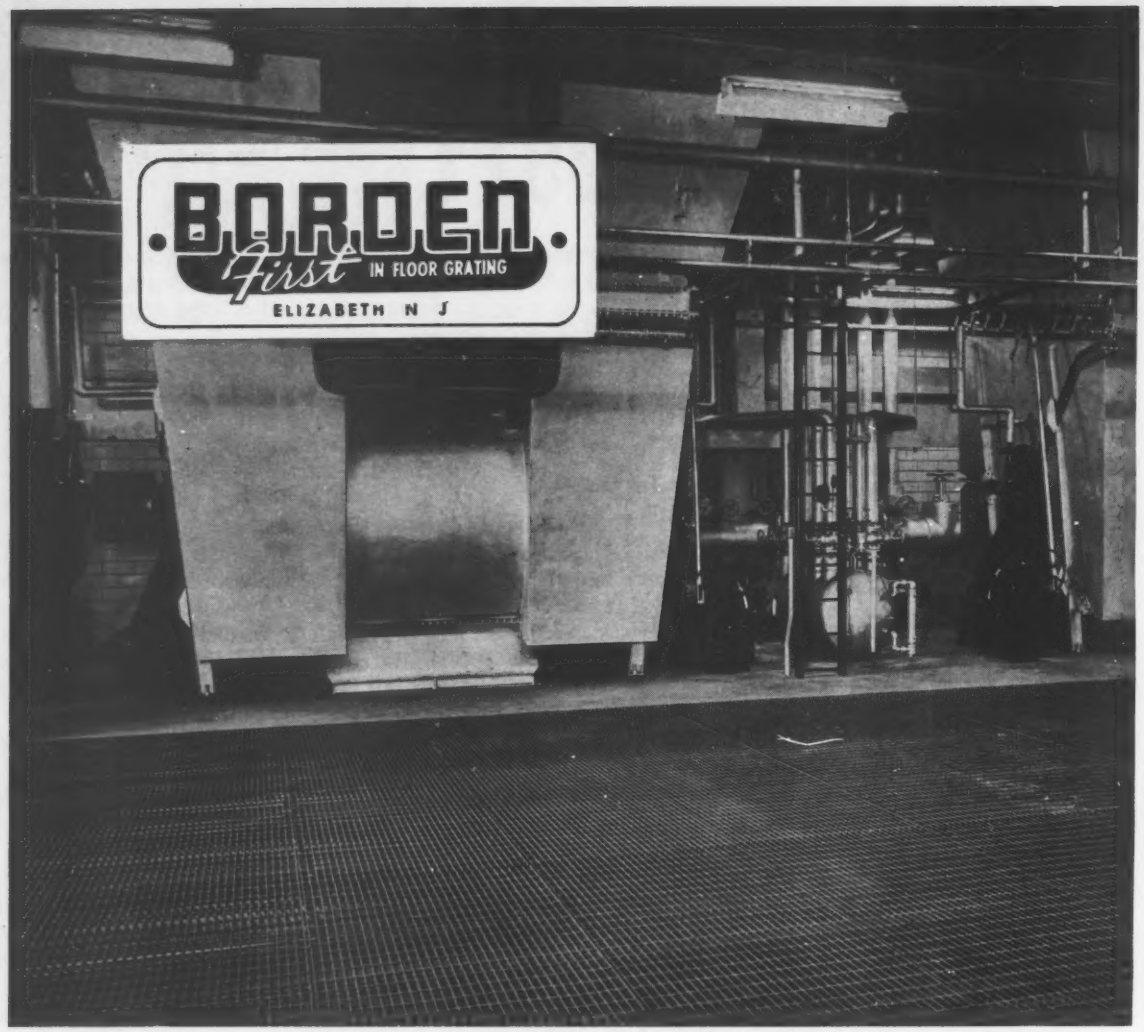
The U. S. will supply tracking radars to be installed at the site, the British will pay for construction and will award the building contracts.

U. S. construction companies will be allowed to bid on the contracts.

Two other BMEWS stations are now under construction at Clear, Alaska and Thule, Greenland.

—

● **A real squeeze on Jimmy Hoffa is now certain.** It will come from the Board of Monitors appointed in 1958 by Judge F. Dickinson Letts to police teamster union reforms. The Supreme Court this week freed the monitors' hands by turning down Mr. Hoffa's challenge of the monitors' powers over the union. The monitors now plan to push charges already on file with Judge Letts. These include a charge that Mr. Hoffa mishandled union funds.



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Architects vs. Engineers . . .

Who's Responsible for What?

- **Despite state laws and professional codes, the functions of the architect and engineer still overlap—and cause disputes.**
- **Now the issue is being debated by professionals in New Jersey.**

The long dispute between architects and engineers over what type of work each may do has come to a head in New Jersey. A special quasi-judicial board is investigating charges that an engineer practiced architecture without a license in designing a country club addition and a house.

New Jersey architects and engineers regard the case as a test. The real question—and by no means a new one—is where does architecture leave off and engineering begin.

The five-man investigating board was created by the legislature in 1952. It's composed of the deputy attorney-general, two architects and two engineers. The board hears complaints filed by either the State Board of Architects or the State Board of Engineers. If it finds cause for the complaint, the case could be returned to the professional bodies, which may levy fines of up to $1,000, or it could be appealed to a state court by the defendant.

Both professional groups hope the current hearings will provide a permanent solution to the problem—a solution that can be a model for other states.

The New Jersey engineers seek an agreement or law that would allow either an architect or an engineer to design any structure, provided he is professionally and technically competent to do the work. New York, Michigan and 31 other states have licensing laws permitting this. Some of these laws provide that neither the architect nor the engineer can use the other's title, even when doing work normally considered within the other's domain.

The American Institute of Architects and the National Society of Professional Engineers have approved an interprofessional policy that emphasizes competence. The policy states, in part, "An architect or engineer may ethically accept commissions for projects embracing both architectural and engineering work, provided he is competent to do the type of work involved, or provided he will employ other registered architects or engineers who are competent in those phases of the projects in which he lacks proficiency. The client's interests normally are served best when the principal retained is proficient in the predominant work involved in the project."

The New Jersey architects want a more definitive agreement. They contend that any structure designed primarily for human use and comfort falls within the architect's province. They point to the codes in Florida and Massachusetts spelling out the work of each.

Under the Florida code, the architect is recognized as the prime professional on "residences, apartments, hotels, stores, office buildings, churches, schools, hospitals, courthouses and all other similar private, commercial and public buildings."

The engineer is named as prime professional on roads, bridges, docks, power plants, electrical generation, power transmission and distribution, water control, water supply and distribution, sewage collection and disposal, heating and air conditioning (when not a part of a major building project), factories in which mechanical or electrical equipment is an important feature, and all other similar projects.

Either may serve as prime professional on such projects as "stadia, industrial buildings, warehouses, cold storage and refrigerated buildings."

Such specific definition is generally missing in most state statutes. All states now have registration laws requiring the licensing of architects and engineers. The laws, however, fail to spell out the respective jurisdictions of the two professions, thus leaving room for the controversies when architecture and engineering overlap.

The jurisdictional dispute between architects and engineers precedes most state licensing laws. An 1896 issue of AMERICAN ARCHITECT discusses the same problem, as have many legal decisions since. But the problem remains unsolved.

Some state courts have ruled that no line of demarcation can be drawn between the two professions in overlapping areas. In at least four states—New York, Pennsylvania, Tennessee and Utah—the courts have ruled the two professions sometimes indistinguishable.

In other states—including Connecticut, Michigan, New Jersey and Wisconsin—the courts did draw a distinction. A New Jersey court decision could be a precedent for the current case. In 1953 a Hudson County District Court refused to award payment to an engineer for his design of a garage and showroom, ruling that he had practiced architecture without a license.

Spokesmen for both the AIA and the NSPE say the number of jurisdictional disputes between engineers and architects has not greatly increased in recent years. But the basic question remains.

An Ohio engineer, for example, feels a court test case there is unavoidable. "I don't see how you can get an architect and an engineer to get together to set up some sort of ground rules by gentleman's agreement," he says. However, he also feels that if a line of demarcation is finally drawn it will be a detriment to both professions.

A West Coast engineer takes another approach. He says, "There's not much of a beef, except maybe at the junior level, and maybe among some of the old goats."

There are a number of reasons why the basic dispute doesn't erupt more often. Among them:

- Definitive agreements between architects and engineers, such as those in Florida and Massachusetts, that outline the projects each may do.
- State registration laws, like those in New York and Michigan, that allow architects and engineers to practice in the same areas if they do not adopt the other's title and if they are competent to perform the work.
- Agreements that allow the client to decide whether he wants to hire an engineer or an architect as the prime professional for the job.
- A growing trend toward architect-engineer firms, with both professions represented on their staffs.

Prestressed concrete structures support this conveyor belt.

Longest Conveyor Belt Opens

A 5½-mile permanent cross-country belt conveyor system with capacity of 1,000 tons of crushed limestone per hour went into operation last week.

The belt conveyor system carries limestone from a quarry at Lawrence, Okla., to a cement mill at Ada. Its builders claim it is the world's longest permanent conveyor belt system.

The conveyor consists of seven separate belt conveyors arranged consecutively to feed onto each other. In its cross-country course, the system changes direction four times, and from the air, looks like a giant letter "S".

It crosses two highways and the Frisco and Santa Fe railroads. Provision has been made at numerous points for passage of cattle and farm equipment over the conveyor, since most of the right-of-way is across farm land.

One conveyor component is almost two and a quarter miles long—the longest single conveyor flight ever built. It requires an endless rubber belt 4½ miles long. Although it travels at the rate of 500 ft a minute, this belt makes only 10 round trips during an eight-hour day. The shortest flight is 550 ft long.

The belts are supported by precast, prestressed concrete channel stringers spanning 50 ft. The stringers also form a cover over the top of the belt. One side of the conveyor is curtained by a continuous corrugated aluminum wind guard. The stringers rest on precast reinforced concrete U-stands.

Where the conveyor is raised to clear highways and railroads, the U-stands are mounted on the top flanges of prestressed concrete girders or on elevated piers. Where spans exceed 50 ft, the conveyors are mounted on the girders, and their flanges are made sufficiently wide to serve as walkways.

Where it crosses the railroads, the conveyor stringers are carried on a series of 97-ft prestressed concrete girders that rest on four-legged towers about 30 ft high.

Link-Belt Co., Chicago, engineered, fabricated and erected the conveyor for the Ideal Cement Co., Ada, Okla.

For Missile Bases: Another $111.8 Million

The Army Corps of Engineers and the Air Force have announced plans for $111.8 million worth of missile base construction.

The Sacramento District Corps of Engineers advertised for bids for construction of Titan launching facilities in the vicinity of Beale Air Force Base, Calif. The Titan base, which will cost about $43 million, will consist of three sites, each of which will contain underground installations for firing three ICBMs.

The sites will be near Lincoln, Chico and Penington, Calif. The bid opening will be held between January 5 and 14. The work for all three complexes will be awarded to a single bidder. The contractor must complete the project by February, 1962.

The Seattle District will call for bids in January on construction of launchers and support buildings for four Nike-Hercules batteries for air defense of Malmstrom AFB and Glasgow AFB, Mont. Construction at each base will total about $5 million. Work will begin in March.

The Air Force announced the release of $31.9 million each for Atlas ICBM base construction at Lincoln AFB, Neb., and Schilling AFB, Kan.

Each Atlas base will consist of nine single missile launching stations. Bid invitations for the Lincoln AFB work will go out this month. The work at Schilling will get under way early in the spring.

Britons Become 'ot Rodders

The traditional image of the English as a restrained people almost overly endowed with common sense was exploded at the opening of Great Britain's first super highway this month.

Many British motorists became speed happy when they were turned loose on the first 72 miles of the six-lane, no-speed-limit London to Birmingham expressway. Drivers reared on England's narrow, looping roads roared down the broad, gently curving highway at 90 and 100 mph.

Police in Northampton had seven accident calls within five hours of the route's opening. There were 100 emergency calls the first day from motorists whose cars broke down from an excess of speed. The engine of one automobile dropped completely out.

Two truck drivers were killed in a multiple crash within the first four days of the opening. Five persons were injured in other collisions.

"I was really appalled at the speed at which some cars were traveling and at the rules and regulations that were ignored," said Transport Minister Ernest Marples.

Most of the accidents were attributed to a lack of lane discipline. The slow drivers do not stay in the slow lanes and faster cars have to weave around them to pass.

The new British expressway, known as the M-1, is part of a 400-mile system of high-speed highways under construction or in the planning stage. The 72-mile stretch cost $44.8 million and was built at the rate of about one-eighth of a mile per day.

The M-1 has three 12-ft lanes in each direction. It has a maximum grade ratio of 1:30 and a minimum curve radius of 2,864 ft.

The new route includes many features that are considered novel in Great Britain: fences to separate the highway from the countryside; bridges over or underpasses under existing roads; exits and entrances at six-mile intervals; and hard shoulders for disabled vehicles.

Free emergency telephones are located at one-mile intervals.

Where U.S. Airport Aid Will Go

The new federal grants for airport construction represent a big switch in business for contractors.

The money is roughly the same as last year: The actual allocation to be spent for the year beginning next July 1 is $57,076,702. But it's expected that contingencies will bring the spending total up to the $63 million that Congress approved when it passed a new airport construction bill this year. The actual federal program for the fiscal year that ended last June 30 was $63,566,135.

With the required 50-50 matching funds from the states, the total airport construction outlay will be about $120 million this year.

The big change is the switch to building runways, taxiways, control towers, and other facilities that contribute directly to the take-off, flying, and landing of airplanes—the so-called "safety" projects (see table).

Completely written out of the program are terminal buildings and other facilities that took a substantial part of funds committed in earlier years.

Building construction, which in the past took 27% of the total budget, will account for only 5.3% this year. But "landing area" construction will increase from 67% of the funds to 92.6%.

Besides the elimination of terminal buildings, the policy laid down by Federal Aviation Agency Administrator Elwood R. Quesada last August banned use of federal funds for all land acquisition except that needed for immediate use—lengthening of runways, for example.

Nor can the funds be used for such construction as auto parking space.

Mr. Quesada says he is following his policy of allocating funds only "when local sponsor funds were assured; in cases where airport sites were selected and approved; for land acquisition to meet existing needs; and for runway development made necessary by traffic volume and wind coverage."

Chesapeake Bay Crossing Is Still in the Cards

The $144-million bridge-tunnel crossing proposed for Chesapeake Bay is not dead yet, even though a bond issue to finance it failed to go to market.

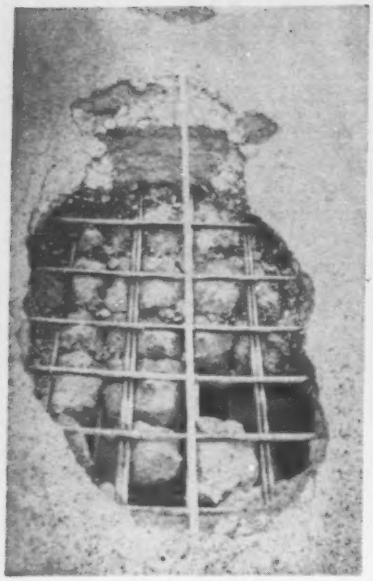
The Chesapeake Bay Bridge & Tunnel Commission and contractors have mutually agreed to extend for six months letters of agreement originally scheduled to expire this month. Chances are slim that the construction bonds will be sold by year-end.

Here's what it will be spent for . . . (Fiscal 1960)

Land	$ 9,560,751	16.7%
Runway Construction	21,684,604	38.0
Taxiways & Aprons	19,474,139	34.1
Lighting	2,147,085	3.8
Control Towers	2,322,959	4.1
Clearing & Obstruction Removal	755,470	1.3
Other Buildings	684,236	1.2
All Other (marking, roads, fencing)	447,455	0.8
Total	$57,076,702	

. . . And what the cities will get ($200,000 or more)

ALABAMA	
Mobile	$ 341,330
ALASKA	
Anchorage	1,181,123
Fairbanks	1,035,500
ARIZONA	
Phoenix	406,212
Tucson	415,782
CALIFORNIA	
Carlsbad	242,999
Fresno	457,117
Lompoc (Santa Barbara County)	669,890
Los Angeles	1,750,000
Oakland	961,899
San Francisco	933,682
San Jose	602,514
COLORADO	
Denver	865,064
CONNECTICUT	
Bridgeport	271,500
New Haven	200,000
FLORIDA	
Miami	201,000
St. Petersburg	378,837
Tampa	455,390
HAWAII	
Honolulu	1,000,000
ILLINOIS	
Chicago	1,313,295
INDIANA	
Evansville	362,750
KENTUCKY	
Covington	760,306
Louisville	666,676
LOUISIANA	
Lake Charles	409,560
New Orleans	1,728,450
MARYLAND	
Baltimore	323,383
MASSACHUSETTS	
Boston	658,000
MICHIGAN	
Detroit	387,000
Grand Rapids	895,000
Kalamazoo	412,500
MINNESOTA	
Minneapolis-St. Paul	915,313
MISSISSIPPI	
Jackson	953,917
MISSOURI	
Kansas City	$822,000
NEBRASKA	
Omaha	602,850
NEW JERSEY	
Morristown	292,200
Newark	300,000
NEW MEXICO	
Farmington	357,417
NEW YORK	
Albany	253,200
New York	2,900,000
Syracuse	795,000
White Plains	256,000
NORTH CAROLINA	
Raleigh	520,500
OHIO	
Akron	271,982
Columbus	900,555
Dayton	384,500
Lima	348,350
OKLAHOMA	
Oklahoma City	1,025,777
Tulsa	1,076,600
OREGON	
Portland	355,517
PENNSYLVANIA	
Allentown	668,350
Harrisburg	344,578
Hazleton	304,250
Philadelphia	1,060,000
Pittsburgh	956,494
TENNESSEE	
Memphis	837,480
TEXAS	
Corpus Christi	487,824
El Paso	488,095
Fort Worth	378,750
Houston	840,000
Midland	358,800
San Antonio	273,927
UTAH	
Salt Lake City	715,620
WASHINGTON	
Seattle-Tacoma	1,168,508
WEST VIRGINIA	
Clarksburg	293,550
WISCONSIN	
Milwaukee	531,500
Oshkosh	299,500



Deck Holes Plague Bridge, but C

Deterioration has forced removal of 4,800 ft of deck.

Deck slab deterioration on an eight-year-old bridge over the Passaic River has cost the New Jersey Turnpike Authority more than $800,000 in the last five years.

That puts the cost of repairs at more than 60% of the initial cost of the deck. As a result, the structure has been the subject of both exhaustive engineering studies and extensive rehabilitation since 1955.

A report now being prepared for the Authority will, in general, re-emphasize four well-known points: The role played by weather conditions existing at the time of concrete placement; the need for adequate coverage of reinforcing steel; the importance of concrete quality control; the desirability of preventing plastic cracking. And repairs have been made with these points in mind.

The current work, now almost finished, required the complete removal and replacement of some 4,800 lane feet of deck. Previous repairs mainly involved patching hundreds of small surface areas—most of them less than a square foot in size, though during a four-year period about 400 lane feet of deck was replaced in small sections.

The bridge is a six-lane, 7,000-ft plate girder structure. Located near the northern end of the New Jersey Turnpike, about five miles from New York City, it clears the Passaic River by about 110 ft. It was opened in 1952.

Many small areas of its deck began showing signs of deterioration in 1955. Crazing of the roadway surface be-

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Consultants Zero In on the Trouble

came apparent, transverse cracks appeared. Later, spalling reached serious proportions. In short order, several spalled areas became pot holes.

Howard, Needles, Tammen & Bergendoff, consultants to the Turnpike Authority since its inception, was asked to investigate the problem and recommend corrections.

Comprehensive engineering studies were begun under the direction of firm partner James P. Exum. A physical inspection of the roadway was made both from above and below. Cracks, crazing and spalling were charted. Variations in surface texture were recorded. Cores 3 in. in diameter were taken from every slab. Concrete was subjected to physical and chemical tests. Construction reports were reviewed and correlated with the condition of individual slabs.

Here are some of the findings on materials:

- Cores tested at an average of only 2,500 psi. (Cylinders taken during placement tested at 3,000 psi.)
- Concrete is more porous and less dense than anticipated.
- There are readily discernible variations in the appearance and texture of the concrete at different locations.
- In many places the reinforcing steel is closer to the surface than it should be.

On the other hand:

- The cement content of all samples tested was greater than required by the specifications.
- Quantitatively and qualitatively, the stone and sand met the requirements of the specifications.
- There is no correlation between variations in surface texture or appearance and the incident of failure.

However:

- The earliest and most severe failures occurred at points where the bars were close to the surface. At the 6-ft-long pot hole pictured, the bars were covered by only ½ in. of concrete. Many failures did occur in areas where the bars had the required 1½ in. of cover, but these failures occurred much later.
- The porosity of the concrete is blamed as a principal source of trouble. This, coupled with checked surfaces believed to have resulted from plastic cracking, permits water (and brine, in winter) to reach and corrode the reinforcing steel. The resulting iron oxide occupies more space than the steel from which it is formed and therefore exerts tremendous pressure on the surrounding concrete. Following the lines of least resistance, these pressures relieve themselves by splitting out the pavement above them. From this state on, the rate of deterioration accelerates.

There was one common denominator turned up by the construction history: Almost invariably, slabs that were cast on warm, dry, windy days showed checked surfaces.

The original patching operations served three purposes: They kept the bridge open; allowed for testing of patching materials; and, most important, permitted the engineers to study deterioration patterns so as to determine repair criteria and repair procedures.

In the replacement pavement sections, the study results manifest themselves in several ways:

- The deck thickness has been increased from 6¾ in. to 7¼ in. by a lowering of the bottom form.
- The reinforcing steel was set 1¾ in. below the concrete surface. (Both the consultants and the Authority would have preferred 2 in. of cover, but they were limited by the need to match existing construction.)
- The reinforcing was fixed in position by being welded to vertical bars, which were welded to the beam flanges.
- Extreme care was used in concrete control, and improved methods were used for batch control.
- Special precautions were taken to prevent rapid drying. A fog spray was used when necessary during the finishing, and a double membrane of cotton quilts was kept wet for seven days after placement.

The bridge was designed by and constructed under the direction of Ammann & Whitney, New York City consulting engineers. Design specifications were set forth by the Authority's structural committee, which consisted of Authority representatives, the general consultant and the engineering firms that worked on various sections of the turnpike. General construction specifications were provided by the Authority and were modified as required by the section engineers. Paving contractor was Johnson, Drake & Piper of Minneapolis.

Highest Lock Opens for Traffic

The Tennessee Valley Authority opened its $38-million Wilson Lock to Tennessee River traffic last week. Local, state and federal officials marked the occasion at Muscle Shoals, Ala.

The new lock has a single lift of 100 ft, highest ever built (ENR Apr. 10, 1958, p. 41). It replaces three locks and reduces average locking time from five or six hours to 45 minutes.

Lock Contract Goes to Joint Venture

A $9.6-million contract for construction of the Upper Lock on the Mississippi River at St. Anthony Falls, Minn., has been awarded to the joint venture of Al Johnson Construction Co., Minneapolis, and Peter Kiewit Sons' Co., Omaha.

Construction is scheduled to start early next month.

Bids generally ran low. All but one of the seven received by the St. Paul District of the Corps of Engineers was below the $12.4-million government estimate.

When completed in mid-1963, the project will extend the head of navigation of the Mississippi 4.6 miles upstream in Minneapolis. It will provide a lift of 49.2 ft—highest on the Mississippi.

The lock will be 400 ft long by 56 ft wide. It will require 245,000 cu yd of concrete and 335,000 cu yd of excavation. The entire project, including the dredging of a 150-ft-wide by 9-ft-deep channel over the entire 4.6-mile length, is estimated to cost about $43 million.

Repair Bill Keeps Growing For Sonic-Boom Damage

An F-104 Starfighter broke through the sound barrier while flying over Ottawa's new $3-million Upland Air Terminal last summer, but the extent of the damage is just now becoming known.

When engineers began going over the building, they estimated the damage at $90,000. Now the figure is up to $550,000. And there may be more discovered as repair work goes on.

Why so much time and why such a rise in the estimate? W. H. Gilleland of Gilleland & Strutt, one of the architectural firms that designed the terminal, points out that sound waves from the boom "seemed to bounce all over the building in a haphazard fashion." There was no clearly defined area of damage. The entire building had to be checked over.

It is still not known whether the building frame itself is damaged.

Damage found so far:

- Over 90 window panels—from 4 x 8 to 8 x 16 ft—were broken and their anodized aluminum frames racked and ripped by the heavy falling glass.
- Prefabricated curtain wall sections were cracked and broken.
- Builtup roofing on the terminal was torn and plowed up so badly that the entire covering had to be replaced.
- Inside, a ceiling of ¾-in.-thick acoustical tile was damaged over 50% of the terminal area.
- An entire wall on one end of the terminal was pulled away from the building—in some spots bracket rivets were sheared.

The repair work should be finished by early summer. But it still isn't certain who will pay the bill. The Canadian Department of Transportation has apparently handed the Canadian Department of Defense a bill for the work.

New York City May Sell Air Rights Above Buildings

New York City is considering the sale of air rights above new public buildings to private enterprise.

"If the governmental purpose is best served by a three-story building in a twenty-story area," said Mayor Robert F. Wagner, "there should be no reason why the right to erect 17 additional tax-paying stories . . . should not be sold to private enterprise."

The mayor has developed no one formula for air-right sales. The city may construct a building, sell it to private enterprise and lease back space; or it may enter into a joint venture with a private builder; or it may erect its own building and sell the right to build above it.

13-Year Road Job

Final section of Detroit's Lodge Expressway opens

The final half-mile of the nine-mile-long, $90-million John C. Lodge Expressway in Detroit has been opened to traffic. It was under construction for 13 years.

The final section, between Third and Randolph Sts., passes 650 ft under Cobo Hall in the Civic Center and leads onto Jefferson Ave. An expressway ramp allows access to the parking deck on top of Cobo Hall (ENR Mar. 29, 1956, p. 25).

The expressway consists of a minimum of three 12-ft traffic lanes in both directions, a 14-ft center strip, two 8-ft refuge lanes, 30-ft service roads where necessary (ENR Oct. 30, 1952, p. 44).

The designed traffic capacity of the Lodge route is 9,000 vehicles per hour.

Now in various stages of design are plans to continue the Lodge Expressway on to Farmington-Brighton Expressway. This extension will provide a direct all-expressway route from downtown Detroit to Lansing, Grand Rapids and Muskegon on the west and to Flint, Saginaw, Bay City and the Mackinac Bridge and Sault Ste. Marie to the north.

At the southern terminus the Lodge eventually will be connected with the Walter P. Chrysler Expressway to form an expressway loop around downtown Detroit.

Construction of the Lodge Expressway was financed by the Michigan State Highway Department, the Wayne County Road Commission and the City of Detroit.

Reactor Projects Planned For Three Universities

The Atomic Energy Commission plans to issue construction permits soon for training and research reactors at three universities. The three are:

- **Stanford University,** Palo Alto, Calif. A 10-kw pool-type reactor there will cost $175,000.
- **Worcester Polytechnic Institute,** Worcester, Mass. The 1-kw reactor facility will cost $167,000.
- **University of Missouri,** Rolla, Mo. Construction and reactor cost will total $223,880.

AEC has given $150,000 grants to each of the three schools toward building of the facilities and will supply, free of charge, enriched uranium for the fuel elements of the reactors.

Curtiss-Wright Corp. will design and build the Missouri unit; General Electric Co. will design and construct the reactors at Stanford and Worcester.

Old New Orleans Goes Modern

A 1-8-mile elevated section of the $25-million Pontchartrain Expressway in New Orleans has been opened to traffic. It stretches from the new Greater New Orleans Bridge over the Mississippi River (background) to the $5-million Claiborne Ave. traffic interchange (foreground).

Only one off-ramp is in use so far. It is for traffic leaving the expressway north on Claiborne Ave. The Interchange is scheduled to go into full service at the end of 1959.

The Pontchartrain Expressway will connect the bridge with U. S. Highway 61, west of New Orleans, and will offer access to the Lake Pontchartrain Causeway.

Seattle Fair: Ready to Build

Seattle will begin construction of more than $13 million worth of public buildings for its Century 21 Exposition early next year.

The first stage of the project—demolition of 224 buildings on a 74-acre site north of the city's business district—is almost finished. The last of the old buildings will be gone by the end of the year.

The Century 21 Exposition construction will include:

- Coliseum Century 21—a $3.8-million structure providing 129,000 sq ft of exhibit space.
- International Science Pavilion—a $5-million building for which federal funds have been allocated.
- A $1-million multipurpose auditorium.
- A concert hall obtained by converting the Civic Auditorium at a cost of $2.5 million.

A planned monorail from the central business district to the exposition grounds still hasn't been financed. Estimated cost is $5 million. Most probable source of the money is a general admission ticket, which would include a ride on the monorail.

Exposition officials expect commercial and industrial funds to match committed public funds in financing the new construction. No commitments have yet been made, although motel construction, stimulated by prospects of the fair, is booming. Some $15 million has been spent already, and another $5 million in motel expenditures is planned.

Computer Gets LA Tryout For Structural Analysis

Los Angeles has approved a plan to use an electronic computer to check the design of a proposed building. The decision came after many months of consideration.

The design analysis, currently under way, is for a 27-story building in Barrington Plaza, a privately financed urban renewal project in West Los Angeles. It's being done on an IBM 650 computer in a program developed by Prof. Philip Silver of Los Angeles State College. Architects for the project are Daniel, Mann, Johnson & Mendenhall.

Program input includes frame geometry, section properties of the various members and the vertical and lateral loads.

Calculations break down into two classes:

- Frame analysis in which joint moments and lateral deflections are computed.
- Strength analysis of individual beams and columns relative to building code requirements.

Results come out of the computer in the form of stress analysis sheets demonstrating compliance with code requirements.

Professor Silver estimates the program could cut manpower needs to a third of what it would take for engineers to do the job.

Structural design of the Signal Oil Building in Los Angeles was analyzed the same way. Brandow & Johnson, structural engineers for that project, checked the computer results in that case. Los Angeles has specified that humans check the computer results this time too.

Responsibility Tightened For Design and Supervision

Revised regulations from the California Division of Architecture contain two important changes in responsibility for plan and specification preparation and in responsibility for field supervision on public school construction projects.

- Architects and engineers in charge of a project shall delegate responsibility for preparation of electrical and mechanical plans and specifications to professional engineers who are registered in these particular branches of engineering.
- Field supervision responsibility for electrical and mechanical work may either be delegated to the registered engineer or "special" inspections must be provided. School authorities will probably rely on local building department inspectors for the necessary specialized checks.

Around the World . . .

- **Updating a top secret**—The Navy is going to convert some of its 20 underground oil tanks at Pearl Harbor to store aviation gas and jet fuel. Construction of the 250-ft-high, 100-ft-dia domed vaults was one of the most secret yet remarkable construction feats of World War II. Bids for the tank conversion will be called in mid-1960.

- **Looking up**—Master's degrees awarded in engineering in the U. S. increased 16% over the preceding year during the 1958-59 academic year. This is substantially higher than most advanced estimates, according to U. S. Commissioner of Education Lawrence G. Derthick. "This is a most heartening development," he said.

- **Offshore filter plant?**—Toronto may build a $23-million water purification plant a half mile out in Lake Ontario if vacant waterfront land is not available, according to city works commissioner Ross L. Clark. The plant would have a capacity of 20 mgd.

- **Landmarks at Oahe**—The world's biggest rolled earth fill—at Oahe Dam on the Missouri River—is now complete, and the first of the dam's seven power tunnels has been holed through.

- **Skyscraper for New Orleans**—A new Orleans developer plans a 28-story office building that will be New Orleans' tallest structure. Developer of the $8.5-million project is John J. Mack of Chicago. Shaw Metz & Associates of Chicago are architects.

- **Mayfield bids and bonds**—Tacoma will open bids for completion of Mayfield Dam on the Cowlitz River January 5 and bids on a bond issue to finance the structure one week later. Bids on three 40,000-kw generators will be opened January 15.

- **Slick idea**—The British Ministry of Works thinks it has an answer to the pigeon menace: a super smooth, colorless varnish. Sprayed where pigeons land, the finish is so smooth birds just fall on their faces.

Barrier to Aswan Dam Cleared

An agreement between the United Arab Republic and the Sudan has removed a major barrier to construction of Aswan Dam on the Nile. It also opens the way for the Sudan to start planning a dam of its own at Rosieres in central Sudan.

The agreement makes available to Egypt land in the Sudan that will be inundated by Aswan's reservoir. And for the Sudan, it holds promise of more sympathetic consideration by the World Bank of financing for the Rosieres project. The World Bank had made settlement of the Nile water dispute a prerequisite for such help.

Under the terms of the agreement, UAR will pay the Sudan $43.2 million for inundated property, and will relocate about 50,000 Sudanese who will be displaced by the reservoir.

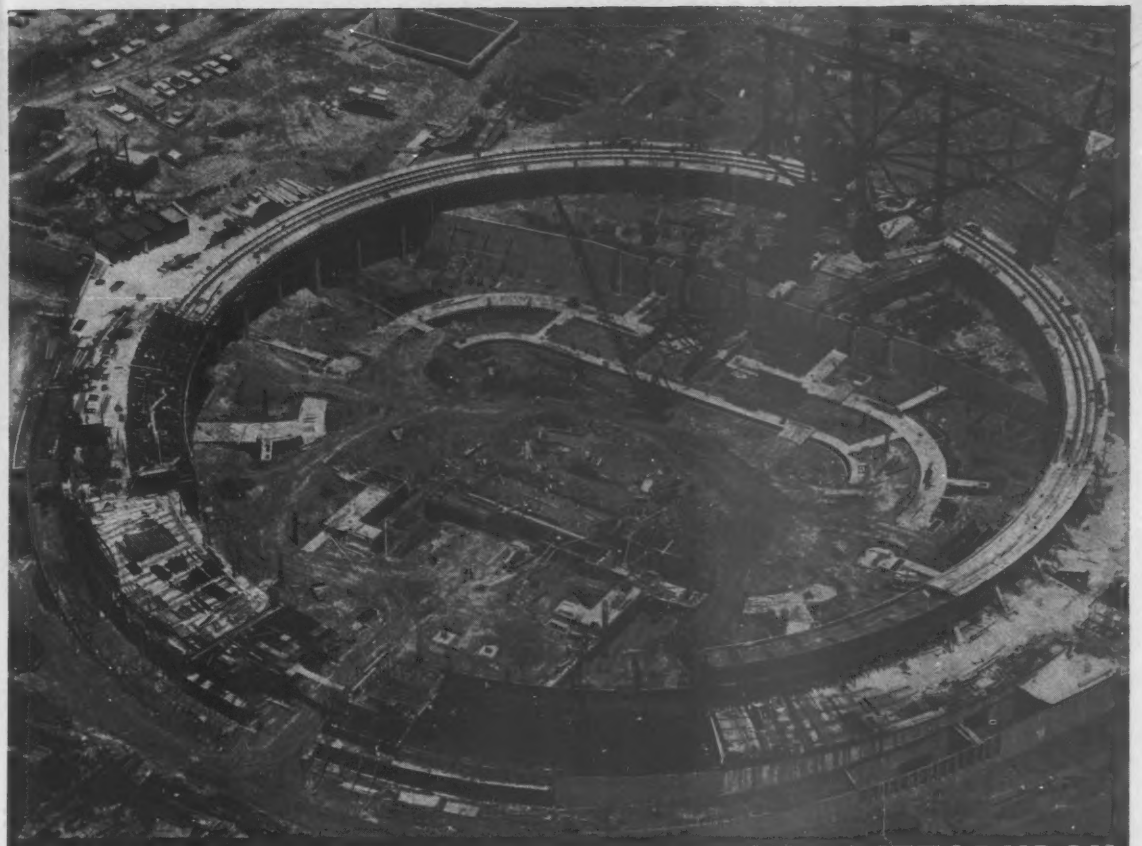
Although UAR retains its rights to the bulk of the Nile flow (UAR now takes 39 million acre-ft a year to 3.2 million for Sudan under a 1929 agreement), the Sudan will get about two-thirds of the flow saved by the Aswan Dam from flowing into the Mediterranean. Thus the final division will be about 45 million acre-ft for UAR and 15 million acre-ft for the Sudan. Annual flow totals about 68 million acre-ft.

One of the Sudan's original objections to Aswan Dam was that its reservoir would lose about 8 million acre-ft of water a year by evaporation. She proposed, instead, a series of smaller dams on the upper reaches of the Nile, where evaporation would be less.

The agreement also permits UAR to borrow 1.2 million acre-ft a year from the Sudan until the Sudanese have finished their own irrigation and power projects.

Pittsburgh Redevelopment Brings Big Changes

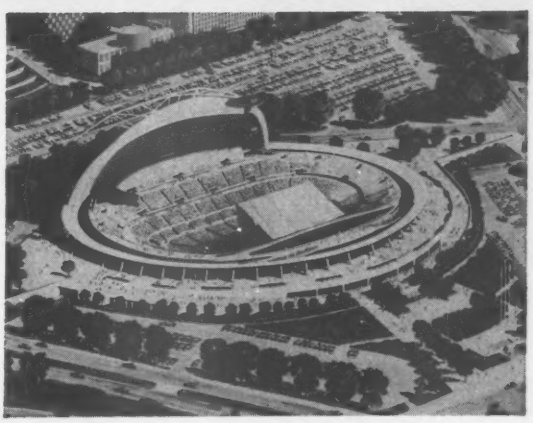
On the following pages you'll find a 24-page special report telling how Pittsburgh has drastically changed its appearance and outlook. Reprints of this report will be available in a few weeks. Single copies are free to subscribers. For quantity rates, write Reader Service, Engineering News-Record, 330 West 42nd St., New York 36, N. Y.



ADVANCE SCAFFOLD MAKES NEWS IN PITTSBURGH

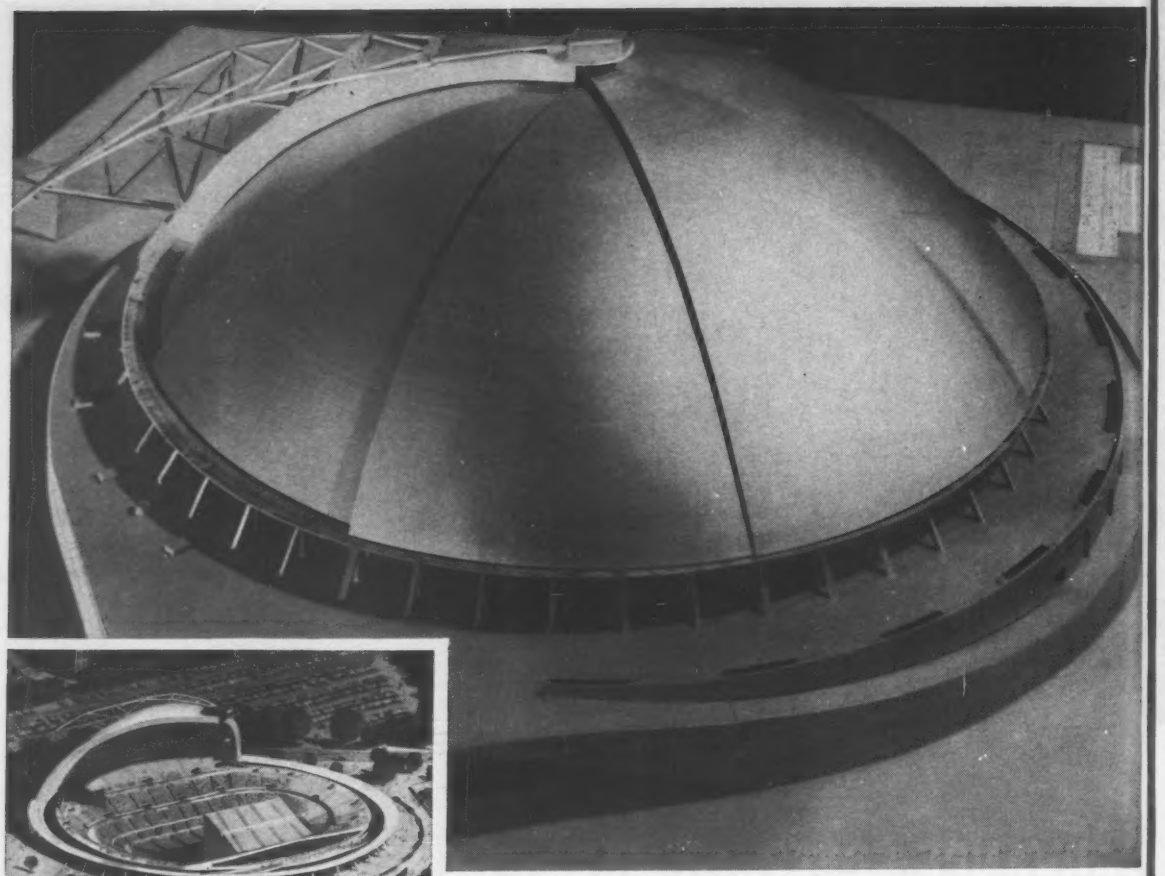
The products of BEAVER-ADVANCE . . . tubular scaffold, accessories and material hoisting towers have been shaping new construction miracles throughout America. One such outstanding project presently nearing completion is the new Civic Auditorium at Pittsburgh, Pennsylvania. Here, thousands of ADVANCE Scaffold panels were engineered into a complex shoring system for construction of the concrete slab perimeter which supports the mammoth retractable roof of this huge amphitheater.

Of course, participation in modern construction miracles has become standard procedure for BEAVER-ADVANCE engineers and technicians. In fact, their efforts are continuously concentrated on the development of improved products and new methods of product application for better building. This has resulted in increased efficiencies and construction economies that are vital to our nation's future growth and prosperity. Architects, engineers and builders can be sure of top-flight construction every time . . . anywhere, when BEAVER-ADVANCE products are specified to do the job. They're for Rent and Sale throughout the United States by leading construction equipment distributors. Write for the name of the distributor nearest you.



Pittsburgh Civic Auditorium
Dick Corp., Large, Pa., Gen. Contr.
ADVANCE Shoring Scaffold by:
Linco Supply Co.
Pittsburgh, Pa.

BEAVER ADVANCE
Beaver-Advance
CORPORATION
Ellwood City,
Penna.



All-weather auditorium in Pittsburgh will be covered by a 415-foot diameter Nickel-containing stainless steel dome. Largest of its kind in the world, the dome will protect an audience of more than 13,000.

"Push-button umbrella roof" of stainless steel gives Pittsburgh a new all-weather auditorium

Watching a play or listening to music under the stars heightens the enjoyment. That is, until a passing shower comes along to wash out the fun. But now comes a new idea in auditoriums. In this one, an umbrella roof of Nickel-containing stainless steel will close at the first drops of rain—and on with the show.

It's a simple concept, but a daring one. Eight huge sections nest together when the dome is open. Push a button, and six of these sections glide quietly together around an outside track.

They looked into all sorts of sheathing materials in designing the dome before choosing Type 302 Nickel-containing stainless steel.

For stainless with Nickel in it is one of the most weatherproof metals there is. It is corrosion-resisting all the way through — in salt air as well as industrial atmospheres. What's more, it's virtually self-cleaning — rainfall alone keeps this metal clean.

No wonder you see Nickel-containing stainless wherever strength, long life and handsome appearance are called for! Not only in buildings — inside and out — but everywhere you look.

Suggest something to you? Can stainless help you solve a problem involving corrosion, stress, appearance, temperature extremes? The way to find out is to write us. We'll see if Nickel-containing stainless steel — or some other nickel alloy — may be just what you're looking for.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street New York 5, N. Y.

INCO NICKEL

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

A special report by the editors of ENR

Focus: Pittsburgh. Application: Anywhere

Fitting Cities to the Future

OUR RAPID ECONOMIC and population growth has outpaced the development of our cities. What is worse, procrastination has too often blocked progress in meeting the problem.

The resulting pattern is familiar: People and businesses move out of the central city to the suburbs; tax income goes down; public utilities are neglected; slums widen; office and industrial buildings deteriorate; traffic congests inadequate streets. Finally, the whole municipal mechanism becomes inadequate and inefficient.

Too many of our cities have allowed this pattern to develop.

By 1975 more than three-quarters of the people in the United States will be living in an urban environment. Plainly, unless urban redevelopment is quickly taken in hand, the hope for a rising standard of living will become a mirage, business efficiency will suffer further and economic growth will be arrested.

Fitting cities for the future, therefore, ranks high, perhaps first, on the nation's list of problems to be solved in the years immediately ahead. To make this problem real and to prove it can be solved is the purpose of this special report. It is focused on Pittsburgh. Reason: More than any other U.S. city, Pittsburgh has demonstrated how a community on the downgrade can arrest its slide, reverse the trend and build anew.

Pittsburgh is a shining example of what engineering planning, political leadership and business support can do to initiate and carry out a program of reconstruction and development. Moreover, since few cities are in a worse state than Pittsburgh was, and no city has any more difficult or varied terrain into which to fit new developments, the example that Pittsburgh provides can cover almost any set of circumstances.

If Pittsburgh can fit itself for a bright future, any city can do the same. It is on this premise that the following account of Pittsburgh's renaissance has been prepared and is presented.

Special Features

1. **Pittsburgh sets a precedent by bold planning, building** *p. 55*
2. **To move the traffic: New bridges replace old ones** *p. 64*
3. **Pacesetting buildings bring new ideas for thin walls** *p. 68*
4. **How imagination created a unique sewage works** *p. 72*
5. **Spectacular auditorium goes up under separate contracts** *p. 76*

1946 Pittsburgh's Point was 60 acres of rundown buildings, narrow streets and freight yards.

Pittsburgh Sets a Precedent by

- **In a single decade of reconstruction Pittsburgh has replaced gloomy prospects with glowing possibilities.**
- **Here's how the city organized for the future . . .**

Except for a few war-devastated cities in Europe, probably no city in the world during the past decade has altered its physical pattern and appearance as much as Pittsburgh.

The wrecked European cities had no choice. They had to rebuild. But Pittsburgh was the master of its own fate. It could choose to do nothing, and let its central business district continue to deteriorate and its slum areas spread. Or it could choose to arrest the decay by bold planning and purposeful action.

Pittsburgh chose to plan boldly, and to take purposeful, quick action to translate the plans into reality.

The city of Pittsburgh owes its beginning to geography and its growth to geology. Two navigable rivers—the Allegheny and the Monongahela—come together to form the Ohio and enclose a point of land that was ideal for a frontier fort and its contiguous settlement.

This favorable geography might have spawned only a thriving river town if it had not been for equally favorable geology. Out of the ground came coal, oil and gas for fuel and energy, limestone and iron ore for making steel, and sand and clay for fashioning glass and pottery. With these ingredients for an industrial economy, Pittsburgh quickly became a large city, then a bigger one and ultimately the center of a vast industrially oriented region.

But growth had its penalties. Industry and homes spilled out of the triangle between the rivers, up and over the steep hills to the rear and onto the far banks. Streets and roads became more difficult and expensive to build. Water supply and sewage disposal posed new and troublesome problems.

The city grew bigger and more prosperous, but it also became dirtier and less attractive as a place to work and live. The amount of solid matter in its smoke laden air was unbelievable and almost unbearable. Pride in the city's future all but disappeared. Worn out factories, homes and utilities could be replaced only with difficulty.

It was against this background that Pittsburgh inaugurated its rebuilding effort. The results so far:

- A city clear of smoke, full of pride that it can paint its houses white if it wants to.
- A city free from the threat of devastating floods.
- A city you can leave and enter without inching through traffic-clogged streets.
- A city where parks and modern office developments stand on what was a downtown slum.
- A city with a future—and more big plans.

These results could never have been

NOW **The Point has new skyscrapers fronting on spacious park. Old bridges are being replaced.**

Bold Planning, Major Building

achieved had there not been people in Pittsburgh who were concerned about its future. As far back as the early 1900's, in fact, a reform administration made a survey, financed by the then-new Russell Sage Foundation, which uncovered vice, corruption and inhuman working and living conditions. Its six volumes of published results and recommendations aroused a latent civic consciousness and led to the organization of the Pittsburgh Civic Commission. The commission studied and reported on transportation, streets, water supply, schools, sewage treatment, smoke prevention and housing. It is said that, with only a few exceptions, there has been no improvement in Pittsburgh in the last half century that was not proposed originally in these commission reports.

(Lesson to Note—In many another city similar old but good reports are tucked away somewhere. Dug out and dusted off, they might prove to be as forward looking as Pittsburgh's.)

But the improvements came slowly, if at all, and invariably too late. Pittsburgh barely coped with the present, let alone the future. World War II and its huge industrial demands provided a reprieve, but as the war drew to a close, concern over the city's future grew.

Associations and committees, existing and newly formed, set out to "save Pittsburgh." Each of the groups was sincere, but limited in outlook and working at cross-purposes.

Fortunately, there was one exception, the Regional Planning Association. It had the necessary broad outlook, but was always short of funds and lacked sufficient business and political support to initiate action.

(Other cities with good planning agencies hamstring them like Pittsburgh did. Like Pittsburgh, they could stop this tragic waste of effort if they would.)

The planning association's executive director, Wallace Richards, sensed that the "save Pittsburgh" campaign was vital, but that the diverse pressure groups promoting it were only creating confusion.

He decided that an over-all organization was needed to establish order and assure cooperation. Also that it should be made up of business men and civic and political leaders who would work hard on nonpartisan committees dedicated to the over-all development of the Pittsburgh region.

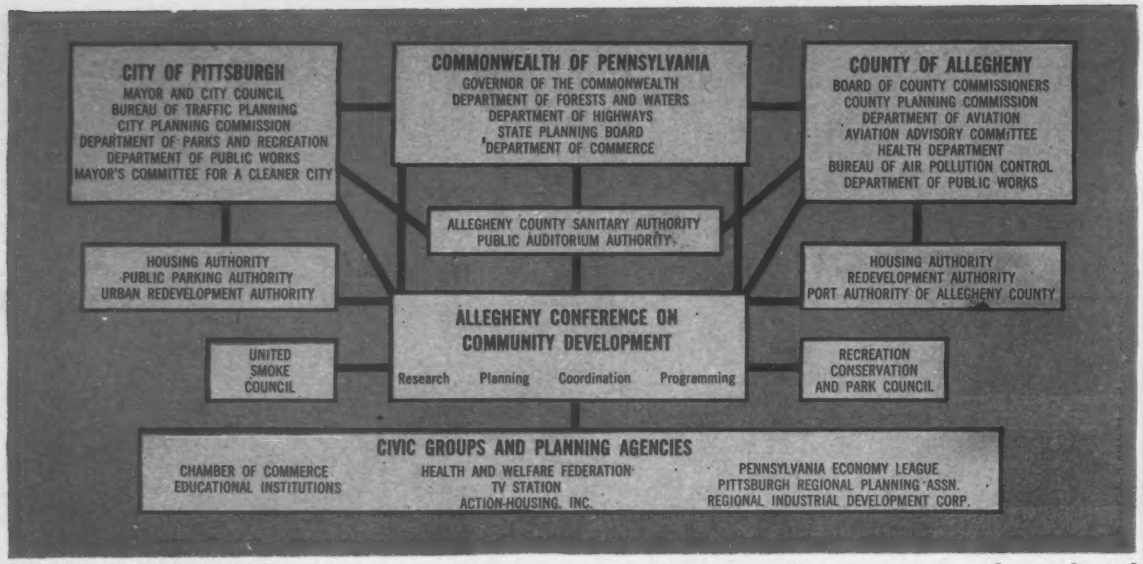
And he set down the objectives of such an organization.

- To develop and advance a comprehensive unified plan and program for the region as a whole.
- To see that various parts of the program were systematically carried out — by government departments where possible, otherwise by the creation of new special purpose agencies.

The basic ingredient for success of such a plan was the unqualified and active support of the top business leaders of the city. This concept had the effective backing of Richard K. Mellon, banker, industrialist and the city's most influential citizen.

(Other cities can enlist business leadership too, even though their economic power may be less concentrated than in Pittsburgh.)

The Allegheny Conference on Community Development came into being in 1943, after six months of meetings by a half dozen industrial leaders and



GUIDING REDEVELOPMENT is the Allegheny Conference on Community Development. It is the focal point for the efforts of all other groups—public and private. It conducts studies and surveys through citizens' committees.

educators, including Mr. Mellon. This group laid the groundwork for a Citizens Sponsoring Committee and won over a much larger number of civic leaders to serve on it. This sponsoring committee, now numbering about 125, is today the Allegheny Conference on Community Development, which has been the guiding hand in Pittsburgh's rebuilding. Serving on it are representatives from industry, commerce, finance, labor, education, public administration and civic affairs.

The Conference was chartered by the state in 1944 as a nonpartisan, nonprofit and privately financed organization. In 1945 it hired as executive director Park H. Martin, a civil engineer who had been Allegheny County Planning Director, and went to work. Soon a technical staff had research projects under way, and citizen committees were evaluating the findings, making recommendations and selling their proposals to government agencies and the public.

The Conference soon became a powerful force, with the backing of Mayor David L. Lawrence, now Pennsylvania governor, and the Allegheny County Board of Commissioners.

Here's how the Conference works: It elects officers and an executive committee from its membership. The executive director reports to the committee and is responsible for administration. There are two assistant directors; one in charge of engineering and one for public relations. An office manager and two secretaries bring the full-time staff to six. Consultants are hired as required for special jobs.

The Conference conducts its studies and surveys through citizen's working committees concerned with the following fields: cultural development, economic problems; health, welfare and recreation; highways; housing and neighborhood development; land use and zoning; parks; mass transportation; parking; refuse disposal; research coordination; smoke abatement; stream pollution abatement; and water supply. Reports and recommendations of these committees and their consultants are made public only after approval by the executive committee.

Funds for the conference's regular operating budget (about $125,000) and for specific projects and programs come from corporations, foundations and individuals.

Why does it work? The city's success in redevelopment stems directly from the efforts of the Allegheny Conference. The reasons for the success of the Conference itself are well worth examination:

The Conference was created as a truly over-all civic organization. It did not try to supersede any of the existing organizations, but rather sought to coordinate the special talents of each and focus them collectively on the comprehensive development program.

(Pittsburgh's precedent suggests to other cities seeking planning coordination: Keep the agency small, let special citizens committees do the work.)

Actually, most of the members of the Conference are also members of one or more of the earlier civic organizations. It is significant that the Conference used the existing Pittsburgh Regional Planning Association as its technical planning arm. In its study and research activities, it relies heavily, too, on such other organizations as the Pennsylvania Economy League, a privately financed governmental research organization; Action-Housing, Inc., the Regional Industrial Development Corporation and the Health and Welfare Federation.

And it operates in close partnership with both the city and the county planning commisisons as well as the quasi-public agencies created for certain phases of the renaissance program.

How the Conference fits in as the focal point in the pattern of civic organizations and government departments is shown in the chart above.

• **It looks to the elected public officials for all actions relating to public policy, legislation and appropriations.** It offers aid, ideas and pledges of support, but it leaves the political arena to

. . . How the

First things had to come first in Pittsburgh's renaissance. And the smoke control ordinance that became effective in 1946 literally permitted the city to see what it was doing—and what it had to do.

The cleaner atmosphere revealed the shoddy appearance of the city in a new light. Psychologically, no rebuilding incentive could have been more effective.

But Pittsburgh had another basic fault—flood threats—to overcome before rebuilding was a worthwhile gamble. Until it could be freed from the possibility of devastating floods, any proposals for major changes in the downtown area between the two rivers were doomed to fail.

Pittsburgh's greatest flood of record

others. Again the guiding philosophy is one of support and cooperation.

• Much of the great strength of the Conference stems from the top business leadership that it can muster in support of its plan and programs. The certainty of this support arises from the way the Conference operates—first, studies and research; then a refining of the results into definite programs by citizens working committees; next, discussion with government departments to secure their acceptance; and finally, approval by the executive committee of the Conference. By the time this procedure is complete and the program made public, effective business support has already been won.

The Conference got off to a quick start with accomplishments that won public favor, choosing three projects that had wide appeal. There was a backlog of projects to start on whose need was widely recognized.

(Getting results from planning is a matter of letting elected officials do the political chores, backing them up with facts and figures, and putting popular projects first on the agenda. Success breeds success.)

The first three projects were a state park at the Point to replace part of a commercial slum, the Penn-Lincoln Highway along the Monongahela River in downtown Pittsburgh, and enforcement of a smoke abatement ordinance.

The committee rallied the coordinated support of civic organizations and local governments, and won state authorization of money for the park and the highway. The Conference was appointed the official agency for the park.

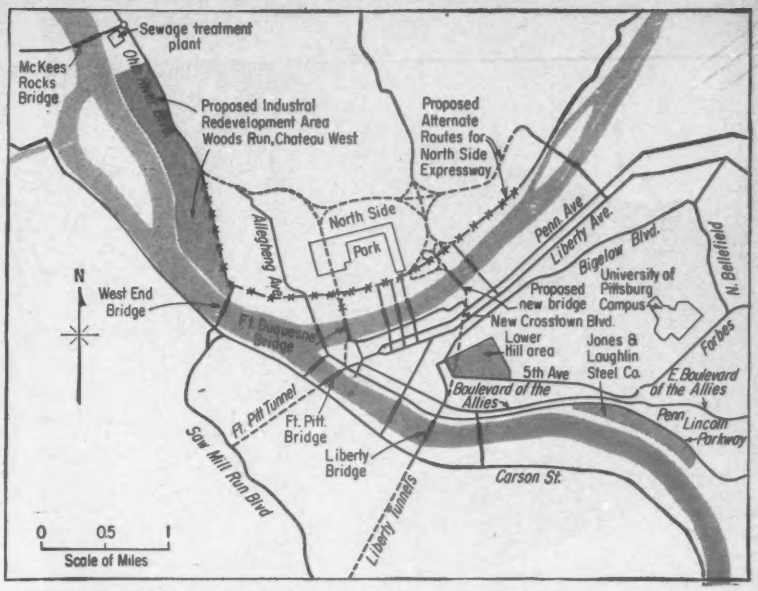
On smoke control, the Conference supported the mayor and city council in enforcing the provisions of an existing ordinance applying to industry and households within the city limits. And it entered the campaign to extend the benefits of smoke control to all of Allegheny County. These activities greatly enhanced the standing of the conference. Slums, clogged highways and heavy smoke were things most residents cared about.

The Conference was now firmly established as a group that could achieve coordination of efforts in getting projects started.

Next it turned to its role of study and research. The result was a series of proposals for needed state legislation, eight of which were enacted into laws.

The laws authorized creation of a City Parking Authority, a County Transit and Traffic Commission to study mass transit, and the right to establish a county-wide refuse disposal system. They permitted creation of a City Department of Parks and Recreation, and allowed local governments to broaden their taxing powers. The new laws also removed the exemption of the railroads from the county smoke control ordinance, relieved the city of damages in connection with construction of limited-access highways and gave the County Planning Commission approval-control over subdivision of lots.

These measures removed many long-standing obstacles to progress. And Pittsburgh was ready for more achievements (see below).



KEY PROJECTS, many completed, others just beginning, will change the map of the city, make it a better place to live, work and raise a family.

Face of Pittsburgh Is Changing

occurred in March, 1936, reaching 21 ft above flood level at the Point and putting a number of the main downtown streets under as much as 8 ft of water. Later that year Congress passed the act that made flood control a federal responsibility for the first time, and set off a huge nationwide dam building program. Pittsburgh benefited greatly from this activity.

By 1946 its flood problem was largely solved. In the next decade, eight dams were built above Pittsburgh on the tributaries of the Allegheny and Monongahela rivers. They included such well known dams as Tygart, Youghiogheny, Conemaugh, Tionesta and Mahoning. They provided insurance that 10 ft would be cut off the crest of any major flood, and that most floods would flow harmlessly past the city. With other dams still in the offing, Pittsburgh no longer considers floods an obstacle to its redevelopment.

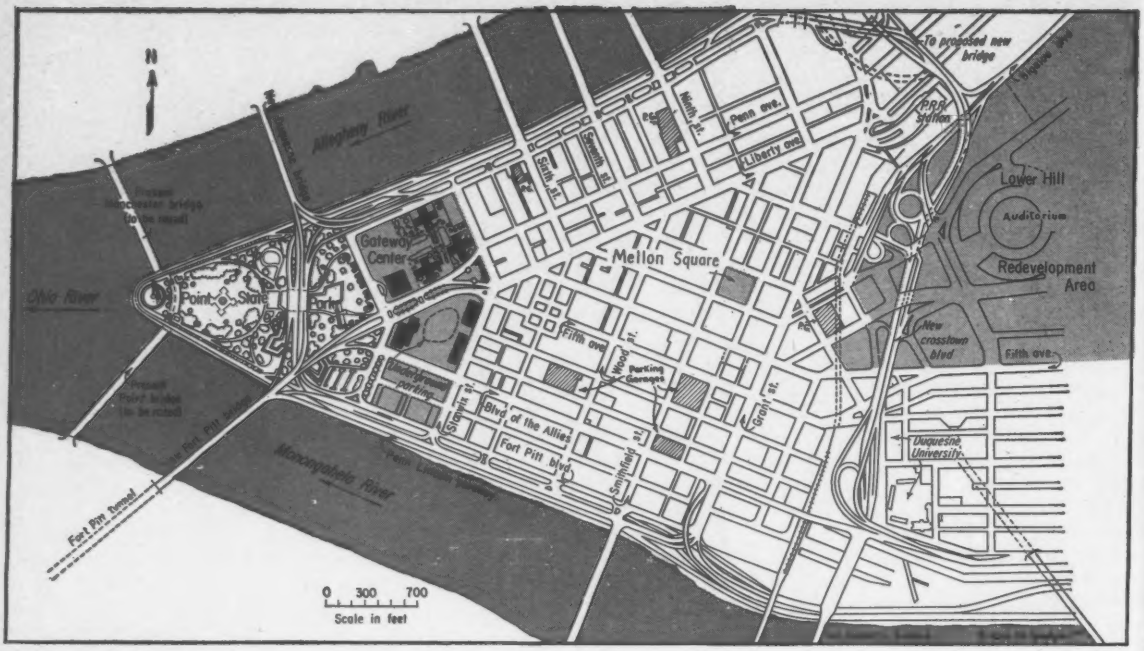
Freedom from floods made the city's first true expressway, the Penn-Lincoln Parkway, practicable enough to justify its expense. It is 25 miles long and for two miles it runs along the bank of the Monongahela River as it skirts the city's business district.

This great parkway rates as one of the country's most difficult and expensive highway projects. On its eastern leg—which extends 15 miles to the Pennsylvania Turnpike—it passes under a residential area, through the 4,225-ft Squirrel Hill tunnel. Along the river end at the Point, it is on an elevated structure. It crosses the river on the double deck tied arch Fort Pitt Bridge (see p. 64) and passes under adjacent Mt. Washington in the twin-tube 3,600-ft Fort Pitt tunnel, which will be completed next year. This western leg extends another 10 miles with a branch to Greater Pittsburgh Airport.

For the bulk of these facilities the cost was about $6 million a mile. But now a motorist can traverse the whole parkway in 30 minutes instead of encountering the long delays that were common on the tortuous and traffic-filled route that the parkway replaced.

Of the $135 million initially put into the Penn-Lincoln Parkway, about $57 million came from the state, $5 million from the county and $1 million from the city. The U. S. supplied the rest.

(Turn the page)



GOLDEN TRIANGLE is being modernized to bring parks to Pittsburgh's business district, relieve traffic congestion, provide modern housing nearby. Another change involves construction of a spectacular municipal auditorium.

The most critical present need is for federal aid on the Crosstown Boulevard between the rivers at the base of the triangle. Nevertheless, the state highway department, with help from the city and county, is going ahead on its own. The first mile from the Liberty Bridge-Penn Lincoln Parkway intersection (see map) is under construction while plans are being made for the second mile, which will extend the route to Fort Duquesne Boulevard along the Allegheny River.

The ultimate plan also includes a new bridge across the Allegheny River. This will connect with the proposed Allegheny River Expressway, which will extend 10 miles along the north bank of the river to an intersection with the Pennsylvania Turnpike.

A southward extension of this same expressway would also provide a connection with the new Fort Duquesne Bridge, now under construction across the Allegheny at the Point (see p. 64) as well as with an expressway route westward. Just where this highway on Pittsburgh's North Side would be placed—along the river or farther back on the hillside—is still undecided. Each of the two routes has its special proponents.

With these projects and others farther from the city in some active stage, from planning to actual construction, Pittsburgh and Allegheny County are rapidly arranging their major traffic arteries into a pattern that will greatly enhance transportation efficiency.

Nearly all of these major expressways originate in the Point, emphasizing the key position this pie-shaped piece of land plays in the Pittsburgh picture. Pittsburgh refers to its entire downtown business section of about 330 acres as the Golden Triangle. Its sides are the two rivers and its base is about at the location of the new Crosstown Boulevard. At the apex of the triangle is the 50-acre area called the Point.

The Point is Pittsburgh's front yard, and no city ever had a more littered one. It was covered with railroad yards, rundown commercial structures and streets leading to obsolete bridges across each of the rivers. The area was plainly marked for renovation.

It was here that Pittsburgh began its rebuilding program in 1945, urged on by the mounting traffic congestion at bridge approaches and disappearing tax income from Point properties.

The state agreed to develop 36 acres into a state park because of the Point's historic national significance as the location of early frontier forts—first France's Fort Duquesne and then the British Fort Pitt. The move also provided space for the traffic interchange facility required between new bridges to be built across the rivers upstream from the old converging structures. Spurred by this beginning, plans were laid for the development of the area.

At that time there was no federally aided urban redevelopment program, and events proved it wasn't needed in this case. The Point Revelopment Committee of the Allegheny Conference recommended that the 23 acres bordering the park be redeveloped by private enterprise, and found an interested participant in the Equitable Life Assurance Society of the U.S.

With this much of a start the city council created the Pittsburgh Urban Redevelopment Authority, which negotiated a contract with Equitable Life and agreed to assemble the land and transfer it at acquisition cost, subject to land-use controls.

The authority was one of the first of its kind in the country and had to be subjected to legal tests. Its final approval by the U.S. Supreme Court paved the way for the present urban renewal setup in which federal aid plays a prominent part.

More than 90 old buildings were demolished to clear the site. Equitable called it Gateway Center and planned a group of tall office buildings in a park-like setting. A 24-story and two 20-story buildings were built between 1951 and 1954. Another, Gateway No. 4, is presently under construction. The first three buildings were pioneers in the use of stainless steel cladding for the exterior walls of tall buildings. They are also notable for their cross-shaped plan, which puts the elevators and utilities at the intersection of the legs, reserving the legs themselves to office space with maximum light and air. The latest building is T-shaped, with the utilities in the leg. Its walls are also largely glass (see p. 68).

Three other new buildings have also been erected on Gateway Center land purchased from Equitable—a 16-story state office building, a 12-story office building of the Bell Telephone Co. of Pennsylvania and the Pittsburgh-Hilton Hotel, just completed (see p. 68).

Prior to development, the assessed valuation of the Gateway Center area was only about $7 million. It is now in excess of $44 million, assuring that taxes will repay the city many times for the investment it made in preparing the site for redevelopment.

Point Park and Gateway Center provided downtown Pittsburgh with its first park-like open space. A second major park project, Mellon Square, was literally carved out of an acre of commercial slums surrounded by some of the city's most imposing old buildings as well as its newest skyscrapers. It's located almost at the geographical center of the Golden Triangle.

It consists of a park on top of a six-story 1,000-car underground parking garage. The park, raised about a story above the surrounding streets, offers large expanses of terrazzo walks for strollers and granite benches for sitters, all in surroundings of fountains, reflecting pools and flower gardens.

The land and the park itself were financed with a gift to the city by the Mellon family—$3.75 million for land acquisition and demolition of old buildings and $665,000 for constructing the park. The Allegheny Conference was the contracting and disbursing agent for the park. For the underground garage, private financing was arranged by the city's Public Parking Authority. In return for operating rights for 38 years, the Morrison-Knudsen Co. and its subsidiary, H. K. Ferguson Co., built and paid for the $3.5-million facility.

Mellon Square, like Gateway Center, gave Pittsburgh something to be proud of. Together, they provided prominent proof of what the redevelopment effort was accomplishing and promoted support for the program.

One of the early accomplishments of the Allegheny Conference was to recommend and guide the creation of the Pittsburgh Public Parking Authority, so that garages could be provided by revenue bond financing.

Off-street parking was necessary because of the traffic problem, but it could not be provided from tax income.

Since its creation in 1947, the Public Parking Authority of Pittsburgh has built six multistory open-deck garages financed through revenue bonds. And it represented the city in the arrangements for the Mellon Square Garage, which was built with private funds.

All of these garages are in the downtown Triangle. They provide 5,150 parking spaces. There are also two paved, metered parking lots in outlying business areas. All of these facilities are leased to private operators, with the authority retaining control over rates and operating policy.

MELLON SQUARE replaced a square block of dilapidated commercial structures with a park in the heart of the Golden Triangle. Under the park: a parking garage.

In Pittsburgh's slum clearance work, the Gateway Center development was the forerunner of today's accepted procedure for large-scale programs, as noted earlier. In this, the government acquires the land, clears slums and then sells the land to private interests for redevelopment. This system was used several times by the Pittsburgh Urban Redevelopment Authority before the federal government came into the picture in 1954 with the now-familiar Title 1 procedure.

Without federal or even state aid, the Authority assembled slum housing properties adjacent to the Jones & Laughlin Steel Corp. plant (two miles up the Monongahela River from the business district) and sold it to J&L for a $70-million expansion of its facilities. Across the river the Authority repeated the operation with 85 acres of blighted area; J&L was again the developer. Concurrent with these industrial renewal operations, the Authority acquired 10 acres of substandard property and transferred it to the University of Pittsburgh for its new Graduate School of Public Health, and a major addition to the Children's Hospital. Another 31 acres was obtained to expand University athletic facilities.

These activities were well under way when the federal government passed the Housing Act of 1954, bringing substantial funds to bear on the nation's urban renewal problem. With the experience it had gained, Pittsburgh's Urban Redevelopment Authority made a Title I project out of one of its greatest redevelopment dreams—conversion of the so-called Lower Hill slum area into a great city asset.

The Lower Hill redevelopment project will replace 95 acres of the worst residential slums in the city. It's located right at the base of the Golden Triangle, within a stone's throw of the downtown skyscrapers. The site is now clear of old structures, and major reconstruction is under way.

The reconstruction is most notice-

PARKING GARAGES now dot the Golden Triangle, providing space for more than 5,000 cars. They're financed by revenue bonds. Garages are leased to private operators, but the Parking Authority retains control of rates and policy.

able in a new six-lane Avenue and in the new Civic Auditorium, a novel circular structure with a retractable stainless steel roof (see p. 76). The auditorium is now being built by the Public Auditorium Authority at a cost of about $20 million.

It is in the center of a 20-acre plot to be devoted to gardens and recreational uses. It will be surrounded with tall, widely spaced apartment houses covering 14 acres. These, in turn, will be surrounded by 19 acres devoted to commercial buildings. The Urban Redevelopment Authority has accepted a proposal from Webb & Knapp to develop one group of these apartment houses. Other proposals are pending.

The 32 acres remaining of the 95-acre area will accommodate the new Crosstown Boulevard, which will run north and south across the western end of the plot.

The Lower Hill project is a key phase of Pittsburgh's redevelopment program. It will provide living quarters near downtown for about 1,000 middle-income families; a new cultural and recreational center; a site for modern small business expansion; and park-like open spaces to supplement those of Gateway Center and Mellon Square.

It is also the beginning of an even more ambitious program of other projects. One of these involves 60 acres of slums immediately adjacent to the Lower Hill project—they may be cleared as a location for new buildings of Duquesne University. This plan is now under study as a possible Title I undertaking by the Urban Redevelopment Authority.

The availability of Title I money has also caused the Redevelopment Authority to begin focusing on ever-larger slum clearance areas. One of the plans covers a 268-acre area in the East Liberty district, about five miles east of Lower Hill. Modern housing accommodations and a revitalized commercial and light industrial district would be provided.

By far the biggest scheme is rehabilitation of a good deal of the near North Side district of the city. This would eventually call for dozens of separate projects. Here deteriorating residential and business areas exist adjacent to the cramped and congested industrial area that borders the north bank of the Ohio River from the vicinity of the old Manchester Bridge at the Point westward to the McKees Rocks Bridge (see map). Through this area, also, will cut the new expressway leading from the new Fort Duquesne Bridge across the Allegheny to a connection with the existing Ohio River Boulevard. The slum clearance required by the expressway is just a starter to what is envisioned as needed for the North Side.

There is also a plan that includes two notable projects for the area directly across from the Point. This plan was initially prepared by the City Planning Commission and the Pittsburgh Regional Planning Association.

One project would replace 74 acres of rundown business buildings with modern apartments and a shopping center. The buildings are now surrounded on three sides by one of the city's fine old parks.

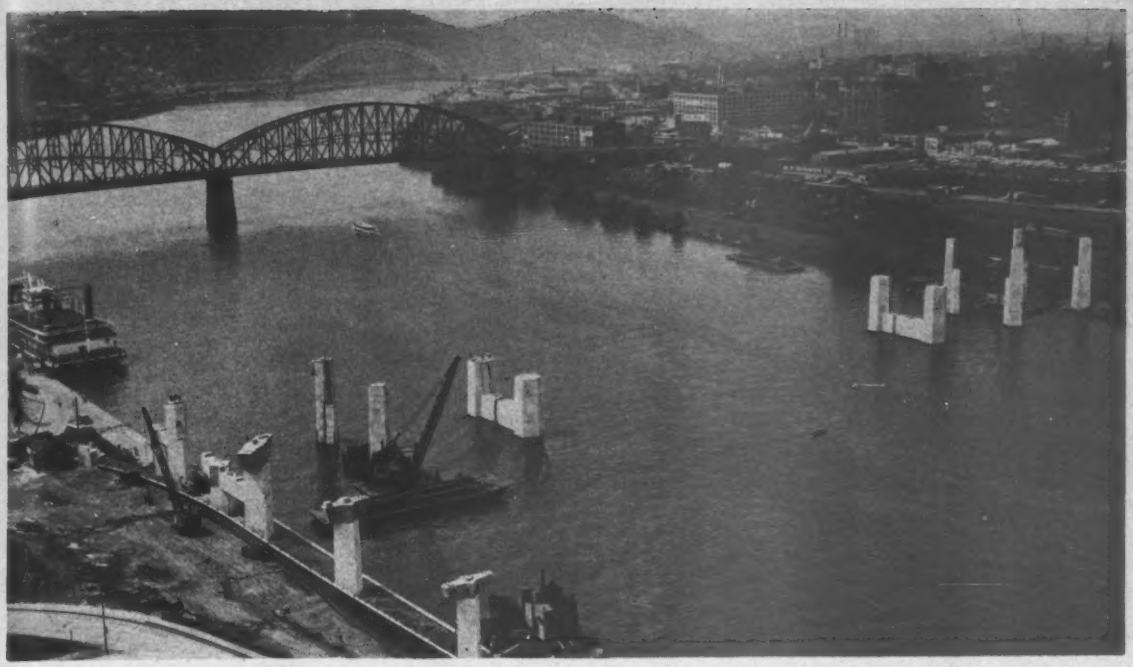
The other project involves a 90-acre area known as Monument Hill; it's adjacent to the first area. The hill would be cut down to provide a level area for a 50,000-seat municipal stadium with a 10,000-car parking field.

But outdistancing both of these in size, in economic impact, and urgency is the industrial redevelopment the planners have in mind for the North Side. The Urban Redevelopment Authority has received Title I planning money for a 165-acre project encompassing the west half of the industrial strip along the Ohio River, known as Lower Manchester Chateau West.

Most significant, the newest of Pittsburgh's planning bodies, the Regional Industrial Development Corporation, has chosen this entire industrial strip as its first project for study, analysis and recommendation.

RIDC was set up in 1955 as a private, non-profit organization to do the same kind of a job for industry that other agencies are doing for housing, highways and business generally. It resembles the Allegheny Conference, on a smaller base. Many of the same top industrial leaders serve on its board of directors. It works closely with all other development agencies and with local governments, serving as a middleman and spokesman for industry with them.

RIDC is concerned with the whole of industrialized Western Pennsylvania. Its objectives: Stimulating expansion of



INDUSTRIAL REDEVELOPMENT is next step for Pittsburgh. Involved are 325 acres (beyond steel truss bridge), along Ohio River. Area is now covered by manufacturing plants that need expansion room. Piers in foreground are for Fort Duquesne Bridge.

existing industry and attracting new companies to the region. The report and recommendations it has made for Pittsburgh's North Side takes both of these objectives into account, but stresses the needs of existing industry. The emphasis now is on rehabilitation, since industries now there need room for expansion and relief from traffic congestion more than anything else.

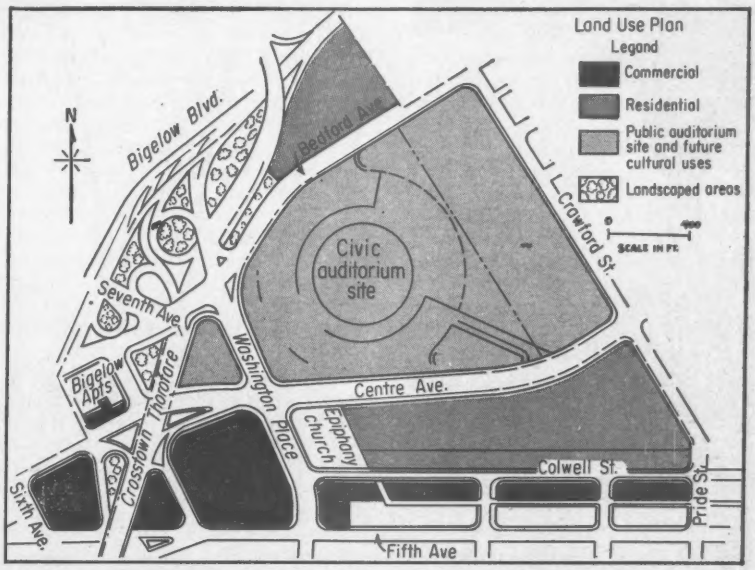
RIDC would like to see the 165-acre Chateau West planning area of the Urban Redevelopment Authority expanded westward to include the 160-acre Woods Run district. Already, 70 acres at the west end, near the McKees Rock Bridge, has been developed in connection with the new sewage treatment works of the Allegheny County Sanitary Authority (see p. 72). Conditions in both Chateau West and Woods Run are identical: narrow streets, serious traffic tieups, extreme building congestion, no off-street parking, and industry without room for expansion. RIDC's report details what can be done to correct these conditions to Pittsburgh's advantage.

More efficient mass transit, everyone seems to agree, is what Pittsburgh must have before it can go much further with redevelopment. Few cities have a public transportation system as bad as Pittsburgh's. About 50 trolley and bus companies operated under franchise in Allegheny County, with no coordination, no transfer privileges and a minimum of connections between communities. The beginning to a solution is seen in a county-wide Transit Authority. An enabling act to authorize one is now before the state legislature.

On two previous occasions, similar legislation has been defeated, so Pittsburgh's future is again in jeopardy. Failure to take this needed step toward more efficient mass transit will be disastrous, says the Allegheny Conference.

Assuming a favorable solution of the mass transit problem, however, Pittsburgh's future is as full of glowing possibilities as ever.

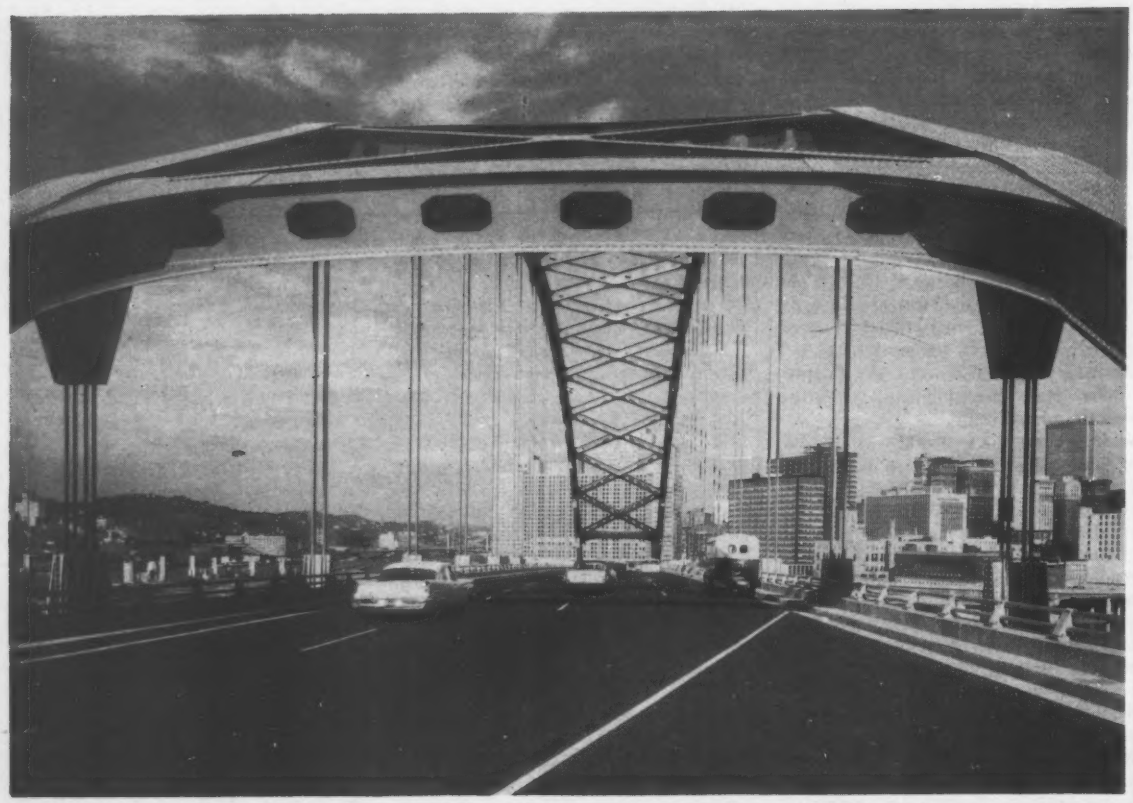
The city already has one of the few jet age airports in the country, the only operating commercial atomic power plant and a health center at the University of Pittsburgh that rates with the largest and best in the nation. Add to these the other redevelopment projects in housing, highways, office buildings, parks, and sewage treatment, and Pittsburgh's precedent for fitting itself for its future is one that every city can study with profit.



CIVIC AUDITORIUM will be surrounded by parks and shopping facilities. It is at the center of Lower Hill area, now cleared of slums.

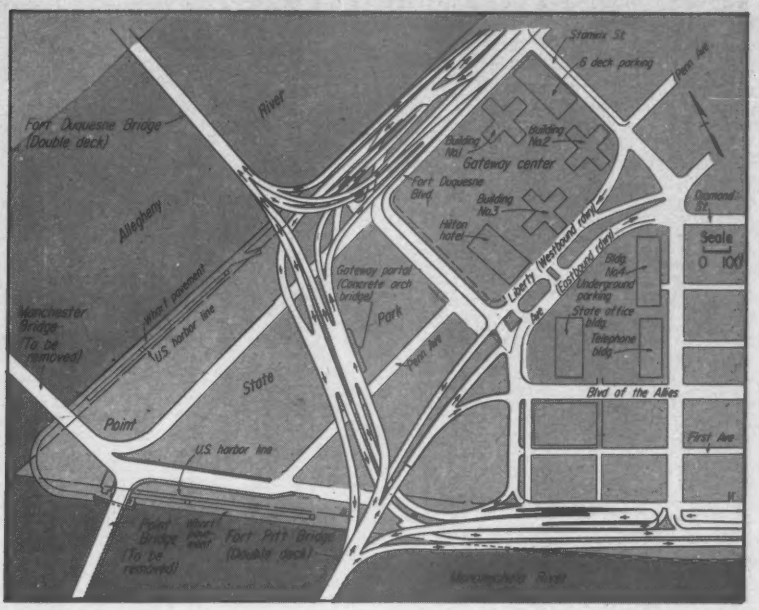
New Fort Pitt Bridge will be connected to the Fort Duquesne Bridge, which will be built on the

To Move the Traffic: Novel New



Open appearance of Fort Pitt Bridge comes from widely spaced suspenders and diamond-shaped sway bracing.

concrete piers in background.



Traffic will flow on this criss-cross network of elevated roadways.

Bridges at the Point

Pittsburgh has traditionally been a leader in introducing bridges of new type or improved design. So it is not unexpected to find the city pioneering again in its current program of reconstruction.

Largest and most notable among the numerous bridges required to modernize the city's traffic arteries will be a trio at the Point where the Monongahela and Allegheny rivers converge. Efficient traffic handling here is a do-or-die proposition. Unless motor vehicles can get into, out of or through this restricted orifice with reasonable ease, every other city activity will suffer.

This trio of bridges consists of new crossings of the Allegheny and the Monongahela and an allied interchange structure to be located in the new Point State Park. They were designed by Richardson Gordon & Associates, of Pittsburgh, for the Pennsylvania Department of Highways.

The river bridges are tied steel arches and, for this type of structure, are unique in combining three unusual features: They are double deck, and they utilize box sections for the arch ribs and trusses for the ties.

The interchange structure, with a deck almost as wide as its span is long, will be a low-rise three-hinged reinforced concrete arch tied with prestressed members between abutments. The structure will also be unusual in that its four arch ribs will be joined transversely in pairs by arched slabs, which will actually hide the ribs from view.

The result: From beneath, the bridge will suggest a series of narrow barrel arches side by side, or even a single wide barrel arch with a fluted surface. This unique architectural treatment is a joint effort, of the offices of Skidmore, Owings & Merrill of New York and Charles M. and Edward Stotz of Pittsburgh. It was planned to add a spectacular and pleasing note to a utilitarian highway structure, which will also be an arched gateway for pedestrians going from one side of the park to the other. Its official name is the Point Park Portal.

The two tied arch bridges are required to replace inadequate truss spans over the rivers. These old bridges practically converge at the Point, leaving no room under modern traffic conditions for a workable interchange. The new bridges, therefore, will be about 1,000 ft upstream from the structures they are replacing.

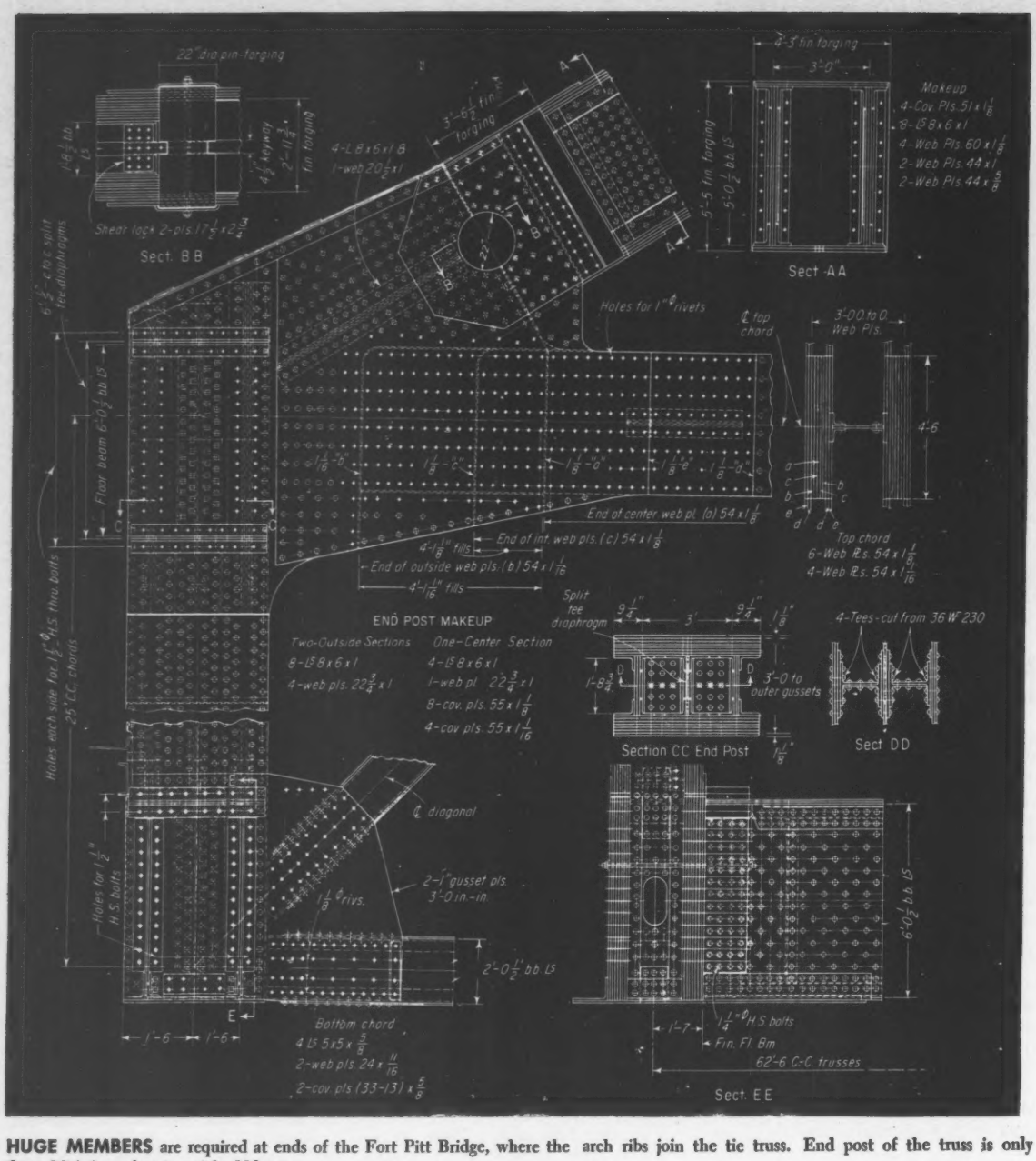
Both new bridges are of the same design, but the Fort Pitt Bridge over the Monongahela is considerably larger, having a span of 750 ft. It replaces the present Point Bridge built in 1926. The Fort Pitt Bridge has been in service since July.

Steel erection is just about to start on the Fort Duquesne Bridge over the Allegheny. Foundations were completed this summer by the Dravo Corp. of Pittsburgh. It will have a span of only 423 ft but, like the Fort Pitt Bridge, it will provide for four lanes of traffic on each of two decks. It will replace the old Manchester Bridge, which dates back to 1914.

The Fort Pitt Bridge was made a tied arch instead of a truss largely for economy and better appearance. The choice, however, added greatly to the design complications, and might not have been possible, or at least **economically practicable, before the days of electronic computers.**

The work was carried out in two steps. First the structure was analyzed as indeterminate in the first degree by assuming that the arch rib would take no bending moment. But then, for the final design, analysis was based on the true condition—a structure indeterminate to the 15th degree, the unknowns being the arch thrust and the stresses in the fourteen suspenders. It was here that the electronic computer proved its value.

A few days' time was required for one man to prepare input data on cards for the fourteen sets of fifteen simultaneous equations that had to be solved. But after that the mechanical solution by computer was reached in two hours. Many other calculations were also car-


22" dia pin-forging
Sect. BB
4-L 8 x 6 x 1/8
1-web 20 1/2 x 1
3'-6 1/2" fin forging
4-5 fin forging
3'-0"
Makeup
4-Cov. Pls. 51 x 1/8
8-L 8 x 6 x 1
4-Web Pls. 60 x 1/8
2-Web Pls. 44 x 1
2-Web Pls. 44 x 5/8
Sect. AA
Holes for 1" ϕ rivets
℄ top chord
3'-00 to C. Web Pls.
End of center web pl. (a) 54 x 1/8
End of int. web pls. (c) 54 x 1/8
End of outside web pls. (b) 54 x 1/16
4'-1/16" fills
Top chord
6-Web Pls. 54 x 1/8
4-Web Pls. 54 x 1/16
END POST MAKEUP
Two-Outside Sections
8-L 8 x 6 x 1
4-web pls. 22 3/4 x 1
One-Center Section
4-L 8 x 6 x 1
1-web pl. 22 3/4 x 1
8-cov. pls. 55 x 1/8
4-cov. pls. 55 x 1/16
Split tee diaphragm
4-Tees-cut from 36 WF 230
3'-0 to outer gussets
Section CC End Post
Sect DD
Holes each side for 1 1/8" ϕ H.S. thru bolts 25'-0" C.C. chords
Floor beam 6'-0 1/2" bb. LS
℄ diagonal
2-1" gusset pls. 3'-0 in.-in.
1 1/8" ϕ rivs.
Holes for 1 1/2" H.S. bolts
2'-0 1/2" bb. LS
6'-0 1/2" bb. LS
Bottom chord
4 L 5 x 5 x 5/8
2-web pls. 24 x 11/16
2-cov. pls. (33-13) x 5/8
1'-6
1'-7
1 1/4" ϕ H.S. bolts
Fin. Fl. Bm
62'-6 C-C. trusses
Sect. EE

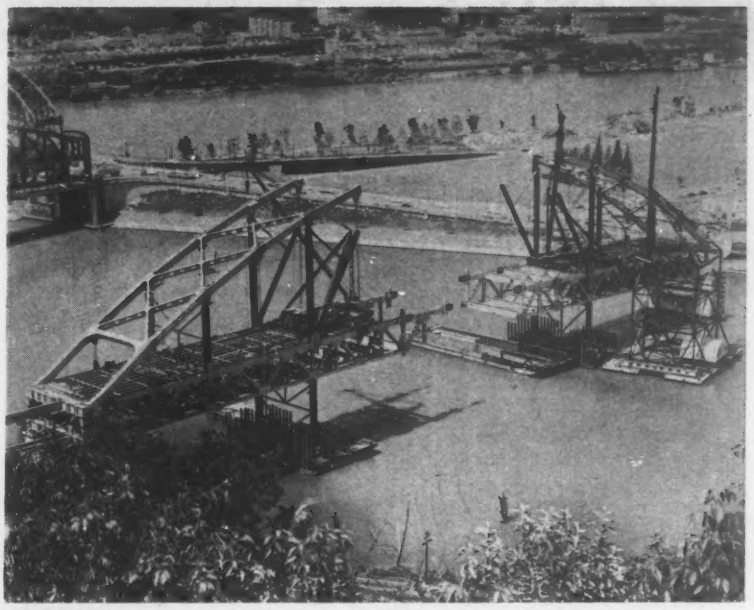
HUGE MEMBERS are required at ends of the Fort Pitt Bridge, where the arch ribs join the tie truss. End post of the truss is only about 30 ft long, but it weighs 118 tons.

ried out or checked on the computer in the course of the design.

The use of a tied arch of the type chosen aided materially in developing an efficient double deck arrangement, since the tie truss was deep enough to accommodate the floorbeams of both roadways and still provide a 14-ft 5-in. vertical clearance between. The trusses of the Fort Pitt Bridge are 25 ft deep center to center of chords, and they are hung 62 ft 6 in. apart on suspenders, each consisting of four 3¼-in.-dia wire ropes. The tie trusses also serve effectively as a stiffening member of the arch bridge, since they distribute live loads almost evenly among the suspenders.

The floorbeams spanning between the trusses are 6-ft-deep plate girders and carry 52-ft-wide roadways made up of a 6½-in. concrete slab and a 3-in. bituminous wearing surface. The upper deck roadway accommodates four lanes of inbound traffic, while four lanes of outbound traffic use the lower deck. (On the Fort Duquesne Bridge these locations of inbound and outbound lanes will be reversed so that all traffic movements through the interchange can follow direct and natural paths.)

Since a tied arch is inherently light and open in appearance—a condition accentuated in this case by the use of a truss as the tie member—a basic tenet of the designers was to make all other elements of the bridge as light and open as possible. Thus suspenders are spaced 50 ft apart, instead of at every 25-ft panel point. Also, the upper lateral bracing system is so proportioned that no cross struts had to be used.



IN ERECTING Fort Pitt Bridge, tie trusses and arch ribs are cantilevered together. For Fort Duquesne Bridge, trusses will be completed first, then arch ribs.

The result is a diamond shaped pattern.

In the interest of lightness, too, all main members of the bridge—arch ribs, truss chords and about half of the diagonals and verticals in the trusses—were fabricated in high strength structural steel.

In the original design, the engineers had also used high strength rivets, but these were changed to carbon steel at the request of the then chief engineer of the Pennsylvania highway department. This change, theoretically, increased the number of stress-carrying rivets nearly 50%, and actually required substantial increases in the size of many of the gusset plates. The result is that the bridge is some 300 tons heavier than it otherwise would have been. As built, the Fort Pitt Bridge contains 8,000 tons of steel—high strength, carbon and cast.

Some of the sections required for the main members of the Fort Pitt Bridge are of substantial size and unusual makeup (see drawings). That's because of the long span and the large live load (eight lanes of traffic).

The end panels of the arch ribs, for example, which are proportioned for a design load of 6,000 tons, require a sectional area of 746.5 sq in. The largest member in the bridge is the vertical end post of the truss. It weighs 118 tons. It has an area of almost 1,000 sq in. Its size is governed by the vertical reaction of the arch rib and the lateral wind forces, which must be carried by portal action to the piers.

Other elements of the bridge notable for size are the 22-in.-dia forged alloy steel pins that connect the arch ribs to the truss tie, and the truss shoes on the piers. A steel casting 8 x 10 ft in plan and 4 ft 6 in. high is used to carry the 10-in.-dia pin of the shoe at the fixed end, while the expansion shoe includes a steel forging 8 x 10 x 2 ft 10 in. high set on top of its segmental rollers.

Several unusual design features characterize the Fort Pitt Bridge. One of these was the use of a modified H-20 S-16 live loading. Load concentrations and impact were ignored except for individual members in the floor system and for those vertical truss members governed by localized loads. Another design feature was to camber (shorten) the suspenders for a dead load stress 25 kips greater than that calculated. This induced stresses in the top and bottom chords of the truss of opposite sign to the stresses due to dead load moment carried by the truss. This made the indeterminate analysis of the structure converge quickly.

Because of the uniqueness of this bridge, a 1:100 steel model was built and tested before final design. The rib and truss sections of the model were made to conform to the sections determined in a preliminary design. An exact theoretical analysis of the model was then computed and compared with the experiment results. Very good correlation resulted. Another useful purpose of the model study was to confirm the existence of a sharp node on the otherwise curved influence lines for the wire rope suspenders.

The contracts for erecting both the Fort Pitt and the Fort Duquesne bridges were obtained by the American Bridge Division of the U.S. Steel Corp., and it has elected to use a different method for each.

On the Fort Pitt Bridge, the entire structure of trusses and arch ribs was erected in one operation, working simultaneously from each end. Six falsework bents were required, three for each half, 50 ft, 100 ft and 200 ft out from the piers.

For the Fort Duquesne Bridge, the trusses will first be erected entirely across the river, advancing from one end only. They will also be erected in pre-assembled, four-panel sections, whereas the Fort Pitt trusses were assembled in place, member by member. Then in a second operation, the arch ribs will be built out from each end to a closure in the center. Only two falsework bents will be required on the Fort Duquesne Bridge, the first 94 ft out and the second 235 ft out from the pier where truss erection begins.

There is one other basic difference in the erection methods on the two bridges. For the Fort Pitt Bridge, the first 100 ft of bridge from each pier was erected by a floating derrick, after which deck travelers were installed to complete the erection (see photo). On the Fort Duquesne, the floating derrick will erect the entire bridge.

At the stage of Fort Pitt erection shown in the accompanying photo, the arch ribs being extended out from either end are supported by temporary columns at truss panel points 4 and 8. Note also that a diagonal member is being extended outward from the base of the column at panel point 8. When an additional section was added to this member it extended to the mid-point between panel points 10 and 12. Here it supported the next rib section directly and permitted cantilevering the following rib section, which adjoined the closing member of the arch. When it was time to install this latter member, the two deck travelers, which had erected the bridge from either end, picked it up together and lowered it into place from above.

Following this, the closing top chord members were placed, and closure effected by jacking the south half of the span horizontally (about 3 in.) with the aid of jacks at the south pier.

Jacks in the falsework bents (one of 1,250 tons capacity at each leg) were then lowered to permit the closing arch rib member to be connected. The jacks were then lowered further to free all the temporary members supporting the arch rib. After a further lowering of these jacks to release the falsework bents, erection was complete with the exception of the closing member at the center of the bottom chord of the truss. This closure was effected by jacking the two halves apart to permit inserting the member, and then releasing the jacks to make connections.

Fitting Cities to the Future

Pittsburgh Sprouts

At the tip of Pittsburgh's Golden Triangle there is now a glint of gold. You see it almost immediately when you enter the city from the airport. It's the new Hilton Hotel, one of many extraordinary buildings sparking the renaissance of the city's business center.

The hotel, just opened, is enclosed in spectacular panels of gold-anodized aluminum. Protruding slightly outward, they house the windows like picture frames, and the changing angle of the sun produces a variety of intriguing light and shadow effects on the angular surfaces.

When you can turn your eyes away, you soon become aware of other unusual buildings. For when Pittsburgh, as part of its redevelopment program, replaced obsolete, dilapidated or uneconomic structures in its business district, it did so with buildings that incorporate the latest concepts in architecture and structural, mechanical and electrical engineering.

Across the street from the Hilton is another startling structure. It's being enclosed with stainless steel and glass panels. This is the fourth and newest structure in Gateway Center, which is an office-building development sponsored by the Equitable Life Assurance Society of the United States.

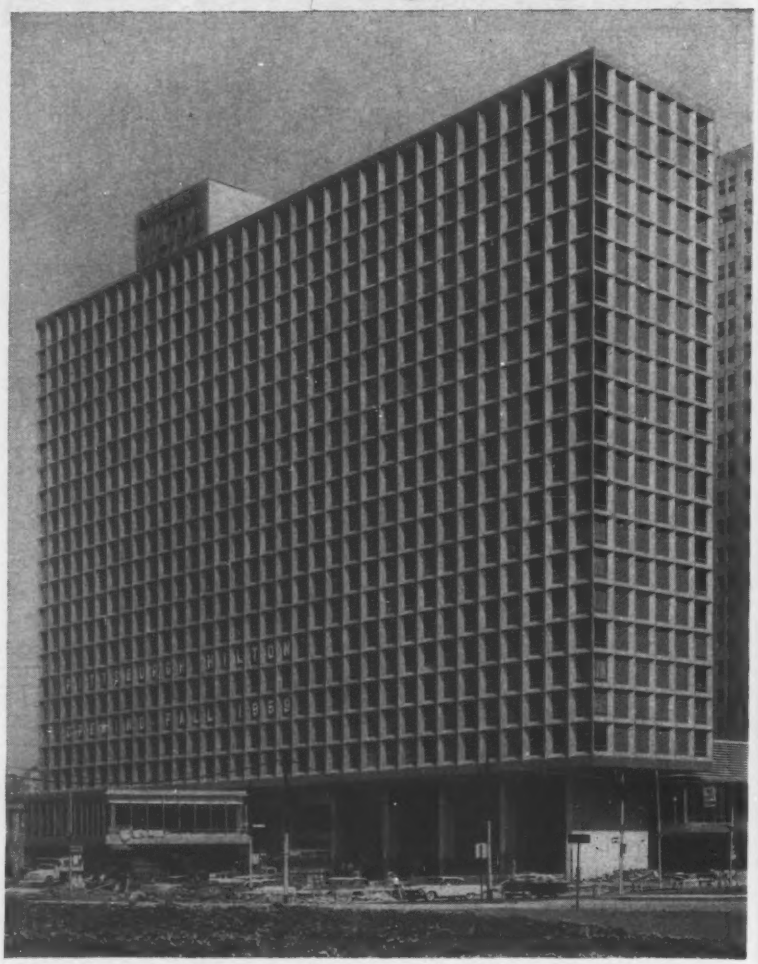
Nearby, a bright blue building draws your attention. It's the two-year-old, 16-story State Office Building—sheathed in blue anodized aluminum (ENR Feb. 21, 1957, p. 109). It is separated from Four Gateway Center by a park over a huge underground parking garage.

Behind it is the new 12-story Bell Telephone Building, with a facade of metal and glass. And then you will note the three other, cross-shaped, stainless-steel-paneled Gateway Center buildings.

Continuing deeper into the business center, you pass many older structures, not yet ready for the wrecker. Interspersed among them are new multi-story, ramp-type parking garages.

Finally you come to Mellon Square, which might be considered the center of gravity of the Golden Triangle. (The square itself is a park over another parking garage.) Towering above this oasis in the midst of skyscrapers are two striking buildings that also played a major role in Pittsburgh's renaissance —the U. S. Steel-Mellon Bank Building, and the Alcoa Building. And close by you see the spanking new 17-story H. K. Porter Building, clad in gray aluminum, much like the Alcoa Building.

These buildings, though important in Pittsburgh's redevelopment, probably are at least equally significant worldwide because of their effect on architecture and engineering. They bolstered the postwar trend to thin walls for tall buildings and to air conditioning. And you find in them the latest concepts in structural engineering, in electrical distribution and in lighting for skyscrapers.



Hilton Hotel—its gold color adds glamor to Pittsburgh's Point.

The trend to thin walls appears to have received its greatest impetus from the erection of the U. S. Steel-Mellon Bank Building, the original Gateway Center buildings and the Alcoa Building in 1951 and 1952.

The 41-story U. S. Steel-Mellon Bank Building hardly classifies as a thin-wall structure, since its walls have a thick backup. Nevertheless, its metal exterior attracted worldwide attention and aroused interest in this type of construction. The facade consists of stainless steel panels placed in vertical strips between narrow limestone-faced piers extending the full height of the building. Behind these panels are an air space and an 8-in. brick backup. Each story-high panel incorporates both a window and a spandrel (ENR Feb. 22, 1951, p. 40). Earlier metal facades had independent spandrels.

For the first three office buildings, in Gateway Center, a stainless steel facing and precast lightweight-concrete backup were preassembled for installation as a complete wall unit (ENR April 24, 1952, p. 67). This project established the practicability of combining facing and backup for a tall building into a single, prefabricated unit. Total thickness of some panels is only 4½ in., compared with the 10 to 13 in. previously used for masonry walls.

The 30-story Alcoa Building was enclosed with story-high panels made of ¼-in.-thick stamped aluminum sheets, each incorporating a 4-ft-high window (ENR April 3, 1952, p. 67). Behind the facade is a 1½-in. air space and a

New Ideas In Thin-Wall Buildings

Four Gateway Center—more offices in stainless steel and glass.

backup of perlite concrete only 4 in. thick. Total weight of this wall is 40 psf, about one-third that of conventional masonry walls of that time. It probably was the lightest ever used for a tall building until then.

The vertically pivoted windows were an innovation. They are double glazed for insulation, and a rubber gasket around each is inflated to 22 psi to make them watertight.

After the construction of these buildings, thin, light-wall skyscrapers were erected in many cities.

Gold-Colored Hotel

The brand new Hilton Hotel continues the trend to thin-wall buildings. The backup used behind its story-high, gold-anodized aluminum walls is only 1½ in. of insulation and 1 in. of plaster.

The $15-million building is comprised of a 22-story tower and a three-story base 200 x 275 ft. The base incorporates a 120x50-ft dining room with curved exterior, as well as the lobby and usual main-floor hotel facilities. The tower is long and narrow—283x51 ft—and contains 812 rooms.

Near one end is a projecting service core with five passenger elevators, three service elevators and one automobile lift to the ballroom level (second floor). Unlike the rest of the tower, this portion is enclosed in light-colored brick and concrete.

The building is of flat-plate concrete construction, except around the 160x120-ft ballroom. There, steel plate girders span 120 ft across the room at 25-ft intervals between steel columns.

Floors in the 51-ft-wide tower are supported on only two rows of reinforced concrete tied columns. The rows are about 28 ft apart, and the spacing of the columns in each row is 25 ft.

Floors and roof cantilever 11 ft 8 in. past the columns on the long sides of the building and 16 ft beyond at the ends. The floors are 9 in. thick, except for the 16-ft cantilevers, which are 9½ in. thick.

Columns are thin and wide, so as not to take too much space from the rooms. They range in thickness (parallel to the long axis of the building) from 14 in. at the top of the tower to 30 in. at the bottom. Width is 52 in. up to the seventh floor, 48 in. above. To take wind loads, transverse shear walls were built between the pair of columns at each end of the tower.

Within this arrangement of structural members, the architect placed a central corridor along the long axis of the tower. On either side of the corridor he generally laid out two rooms in the 25-ft space between columns. And he set the bathrooms for adjacent rooms back to back so the plumbing shares a common space.

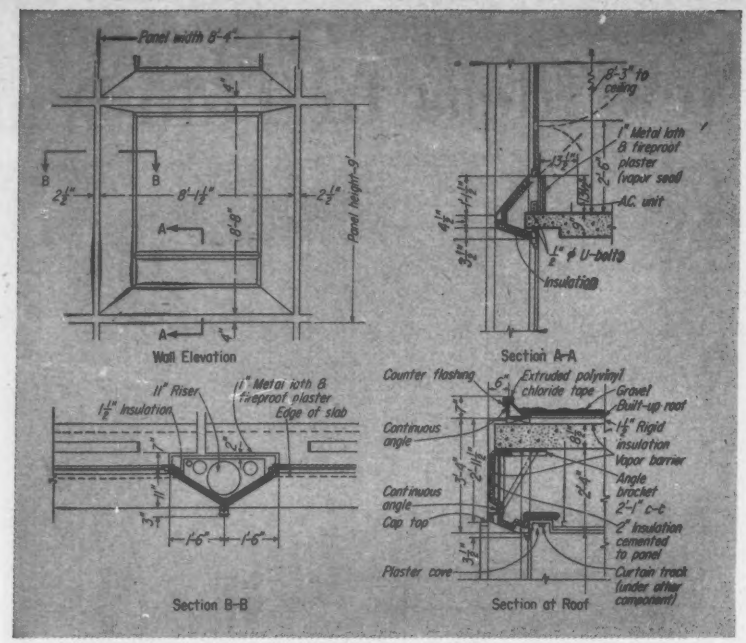
(One minor, though noteworthy innovation: Soapdish tiles are not recessed. Reason: to avoid leakage that sometimes occurs with recessed tiles.)

The floors of the 22-story tower are almost all alike, so the contractor was able to standardize his operations to speed the work and re-use his forms several times. He averaged about one floor per week. Best speed was a floor every three days while good weather prevailed.

To eliminate the forest of shores normally used to support forms in this type of construction, the contractor carried them on expandable-length beams at 4-ft intervals. He needed only 4x4-in. timber shores about 25 ft apart to support these beams. The beams, in turn, carried 3x4-in. wood joists, 2 ft c-c, atop which were the ⅜-in. plywood forms.

The flat-plate floors are made of 3,000-psi lightweight concrete with expanded-clay aggregate. Columns up to the 13th floor are 3,750-psi stone-aggregate concrete; those above, 3,000-psi concrete. Shear and core walls are 3,750-psi concrete. The underside of each floor was ground smooth mechanically, sprayed with a bonding agent and plastered.

Some unusual concrete work was required for the floor of the dining room. The 120-ft-long slab of this curved wing, which is at the level of the second f[illegible] of the tower, is supported on only two concrete columns, 70 ft apart. A reinforced concrete girder, 10 ft wide and 5 ft deep, spans between these columns



Gold-colored panel of aluminum has inward-sloping sides, gives picture-frame effect to hotel windows.

and cantilevers 25 ft beyond at both ends. (Cantilever reinforcing: 40 No. 11 bars in two layers.) The girder supports beams transverse to it that carry the concrete floor. These beams, spaced 20 ft c-c, cantilever 25 ft from both sides of the girder.

In preparation for receiving the panels on the tower exterior, U-shaped steel plates were placed at intervals along the perimeter of the floors and roof. These plates fit around the floor edge and were anchored in the concrete with U-bolts. Their locations were determined by measurements from column grid lines at each level. Threaded studs were shot with a powder-actuated tool into the steel plates at top and bottom of the slab for bolting on panels.

The story-high panels were lifted directly from a delivery truck and hoisted to the various floors for stockpiling near the point of installation. The panels are 9 ft high by 8 ft 4 in. wide, three being used per bay. Two out of three incorporate the frame for a floor-to-ceiling window within the inward sloping aluminum sides that create the picture-window affect. (Provision was made behind it for a 13-in.-high heating-cooling unit on the floor.)

Every third window on the long sides is opaque. Located at partitions, these windows hold a pane of gray ceramic enameled glass, and are backed up with 1½ in. of glass-fiber insulation and 1 in. of plaster on metal lath. In this way, the architect was able to have a uniform facade and yet provide wall space in each room.

The panels were set in place by men working from the inside of the tower They were aided by a small manually operated hoist on a floor above. Mullions, which were bolted to the floor plates, had been fastened to the back of the panels in the factory.

The panels had a lap fit at top and bottom. Vertical edges later were covered with a U-shaped metal sheet, with a neoprene gasket for watertightness.

The sloping vertical sides of the panels provide a prismatic space that is put to good use. Air supply, steam lines and chilled-water pipes for heating and cooling are fitted into these triangular pockets between panels and feed the under-window units from there. Also in these spaces are plastic pipes about 1 in. in diameter that carry condensate to a drain in the basement.

William B. Tabler is the architect, with David P. Dann in charge of the project and John Bungen as field engineer. Seelye, Stevenson, Value & Knecht are the consulting structural engineers, and Jaros, Baum and Bolles, the consulting mechanical engineers.

Turner Construction Co. is the general contractor with H. V. Debo as project manager and Paul Starr as project superintendent. All are New York City firms. Flour City Ornamental Iron Co., Minneapolis, fabricated the 1,496 gold-anodized panels.

Gray Office Building

The newest Gateway Center building, also follows the trend to thin-wall buildings, though its facade differs from those of the other metal-covered Pittsburgh buildings.

Its tower is enclosed with glass, the panes set in slender stainless steel framing. The windowless service core, however, is completely faced with stainless steel.

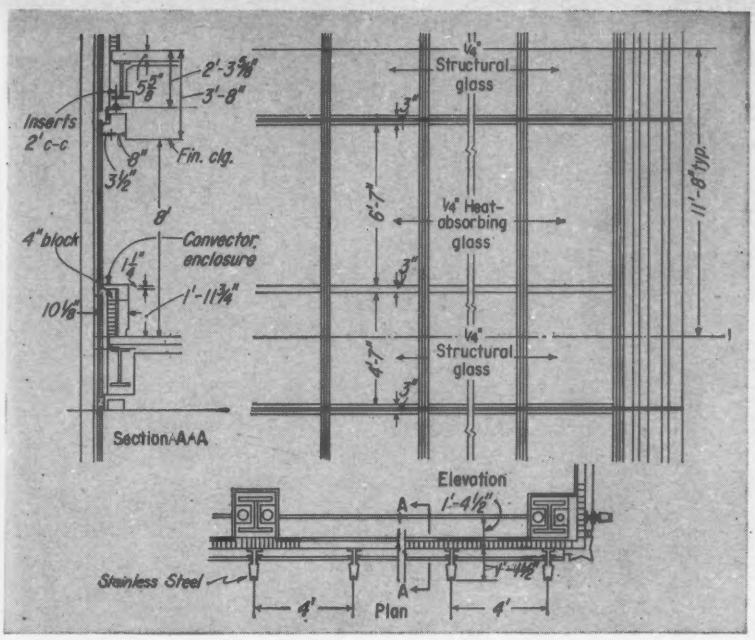
Four Gateway Center contains 400,000 sq ft of floor area. The $16-million structure is 22 stories high, plus two mechanical penthouses. Its tower is 267x63 ft in plan, and the service core, projecting out near the center of the tower, is irregularly shaped, roughly 74x35 ft. It contains twelve elevators, six high-rise (12th floor up) and six low-rise (up to 12th floor) and a stairway.

There is another stairway in the tower and an electric stairway between basement and first floor. The basement has a connection to the three-level garage under the adjoining park.

The building has a structural steel frame with bolted connections, the narrow tower being supported by three rows of columns. Columns in each row are spaced 24 ft, and the rows 24 and 36 ft apart. Girders are mostly 24 WF, and beams, spaced 8 ft c-c, usually 16WF. Floors are cellular steel decking topped with 2½ in. of stone aggregate concrete, for a total thickness of 5⅝ in. Floor-to-floor height is 11 ft 8 in.

Another departure from its steel-framed predecessors is the use of sprayed-on fireproofing on the under side of floor deck and on beams and girders. Later, an acoustic ceiling with recessed fixtures was suspended below, 8 ft above the floor.

The first step in this fireproofing operation was to spray the metal with a latex-type adhesive, to insure proper bond of fireproofing material to the



Stainless steel mullions, fastened to zinc-coated steel framing, accent vertical in Gateway building.

steel. This was done with a conventional paint sprayer.

Then, with special equipment, the men sprayed over the metal a mill-mixed formulation of asbestos and mineral fibers and organic binders. (A thickness of $\frac{7}{16}$ in. on cellular deck has been given a three-hour fire rating; of $1\frac{1}{16}$ in. on steel beams, a three-hour rating; and of $2\frac{1}{8}$ in. on steel girders, a four-hour rating.)

Finally, the fireproofing was tamped by hand to desired thickness and density (about $\frac{1}{2}$ lb per cu ft) and a sealer coat was sprayed on with a conventional paint sprayer. The object of the overspray is to improve internal and surface bonding characteristics and eliminate dusting.

Adhesive and fiber was sprayed from staging by a four-man crew; the sealer was applied from the floor. Four crews, each with their own spraying machines, were used for this building. With two machines per floor, they covered one complete level in $4\frac{1}{2}$ to 5 days.

Columns were fireproofed with concrete. Chases were left in the exterior columns for the water risers of the air-conditioning units around the periphery of the building.

Air lines are located along the edges of the building at about the middle of each bay. They feed under-window units of the induction type. Mechanical rooms are located in the basement and penthouses.

Chilled water for air conditioning is piped in from a central plant across the street in Three Gateway Center. Domestic water is also supplied from tanks atop that building. Steam for heating is purchased from Allegheny Steam Corp.

To hold the glass facade to the structural frame of the tower, 9-ga galvanized steel verticals, painted with zinc chromate for additional corrosion protection, were bolted to the exterior at 4-ft intervals. Then, stainless steel mullions and muntins were mounted on these supports with galvanized clips and stainless steel bolts. The mullions project $8\frac{1}{2}$ in. in front of the muntins to give the facade a vertical accent.

Structural glass panels, 4 ft 7 in. high and ¼ in. thick, were installed as spandrels. They are charcoal gray with a tint of green, to give them the same color in daylight as the windows. The windows, 6 ft 7 in. high, are ¼-in.-thick heat-absorbing, glare-reducing glass.

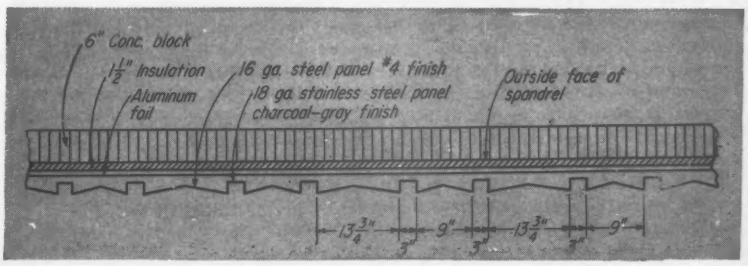
Behind the spandrel panels is a 2-ft-high backup wall made of 4-in. thick concrete block. Under-window heating and cooling units are set against this wall.

The stainless steel panels that face the service core also accent the vertical. Made of 16-ga metal and installed in story-height lengths, the panels are fluted and of different widths. Wide portions have the natural color of stainless steel, but 3-in.-wide vertical recesses at frequent intervals were colored charcoal gray by the Stoner Mudge process. The panels are bolted to continuous, galvanized steel hat sections bracketed on 3-ft centers to the steel spandrel beams.

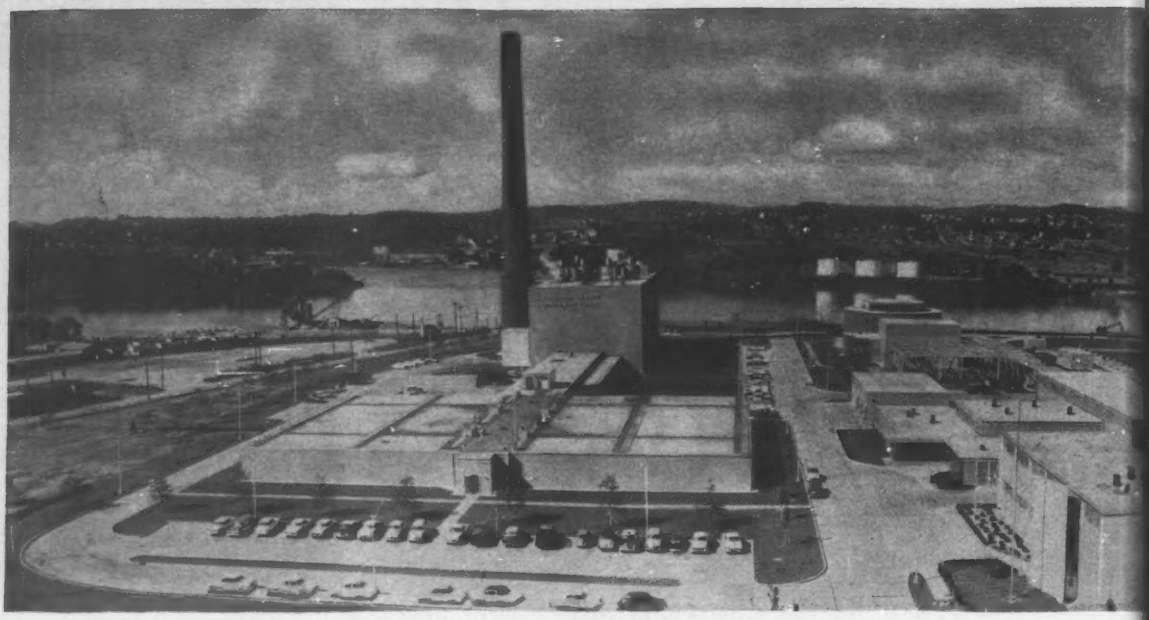
Behind the metal facade are $1\frac{1}{2}$ in. of foil-faced glass-fiber (6-lb density) and a 6-in.-thick concrete-block backup.

Harrison & Abramovitz are the architects, with J. A. Kingsland in charge. Edwards & Hjorth are the structural engineers, and Meyer, Strong and Jones, the mechanical and electrical engineers. All are New York City firms.

George A. Fuller Co., New York City, is the general contractor, the work being carried out under R. J. Nolan, Pittsburgh manager, and Douglas A. Pyle, project manager. Columbia Acoustics and Fireproofing Co. applied the sprayed-on fireproofing. The stainless steel curtain wall was fabricated and erected by Limbach Co., Pittsburgh.



Service-core facade also is colored to emphasize verticality.



It's not only the nation's newest of its size. This plant is the only one of its type.

How Imagination Created Unique

The same sort of bold thinking that brought about Pittsburgh's renaissance produced for the city and its environs a sewage disposal system that is unique.

Combined imaginations of the Allegheny County Sanitary Authority's engineers, its consulting firm and its architects have evolved financing, a design, construction techniques and a finished plant that are all without parallel.

The result is a radically new and architecturally colorful treatment works at the end of a 70-mile interceptor system. It serves 69 communities and Pittsburgh.

Research and development were the essentials to bridge the often unclosed gap between imaginative thinking and finished project. Applied research and development of process and products preceded design and construction to bring many novel features at a net saving in total costs. Among them:

• **The decision to use 33 miles of deep tunnels**—instead of added length of shallower lines—in the interceptor system presented unknowns in the hydraulics of dropping sewage vertically as much as 170 ft from collector to interceptor. Studies at Carnegie Institute of Technology established shaft inlet characteristics best suited to the task.

• **The decision to concentrate sludge by flotation sufficiently to incinerate it raw**—rather than digest it first—came only after extensive laboratory work and pilot plant operation to check out the untried Laboon process.

• **The decision to line tunnels with reinforced concrete pressure pipe, instead of cast-in-place concrete,** followed accelerated erosion tests to prove that 7,000-psi concrete might afford the pipe a 100-year life as sewer lining.

Research also played an important part in other developments:

• The treatment plant's outstanding structure—a circular pumping plant in which five (eventually six) 60-mgd pumps are spaced in an annular ring outside a 40-ft ID wet well, 120 ft deep.

• Selection of glazed brick in four bright, matched colors for the architectural treatment of plant structure exteriors, which was handled by architects Celli-Flynn, of McKeesport, Pa.

• Installation of a telemetering system by which flows at 10 strategic points along the interceptors are reported to operators continuously. This enables them to anticipate arrival of storm flows at the plant and draw down the wet well to accommodate them.

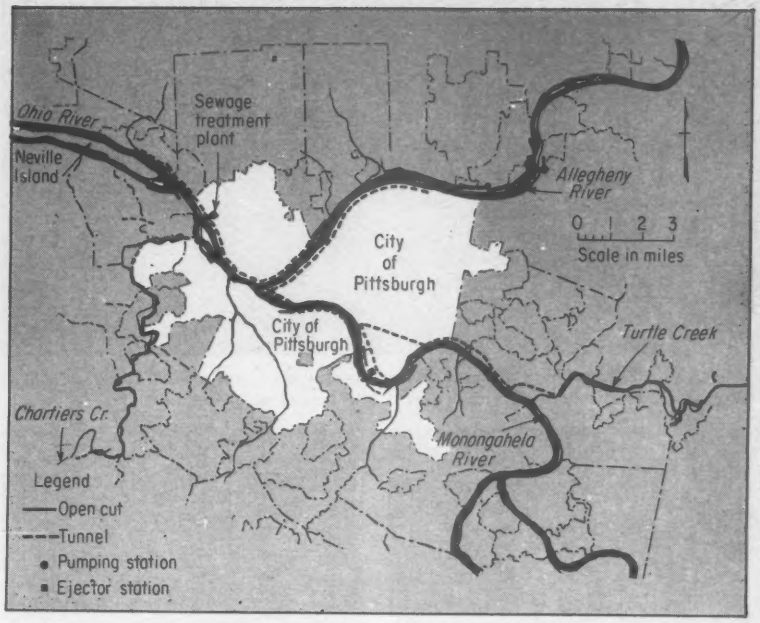
• Establishment of ordinances to protect the finished system from troublesome waste discharges and to establish charges to assure the revenues needed to pay off a $100-million bond issue.

The big thinking, the kind of thinking that has sparked the public's imagination and thus assured the public's support in all of Pittsburgh's efforts to rebuild itself, began for Pittsburgh in this area of water pollution control over a decade ago with the Allegheny County Sanitary Authority and the naming of John F. Laboon (see ENR Oct. 1, p. 67) as its chairman.

As with the entire Pittsburgh renaissance, the first big effort was public relations. From a public educated to the needs came support; with public support came official cooperation; and with official acceptance came financing.

It wasn't easy, of course. Convincing 70 separate communities to participate in the project was a tough job. Only a long, hard selling job by the authority, backed to the fullest by enthusiastic Pittsburgh and county administrations, brought surrounding communities to join with the city in the project. The surrounding communities did not have to put up any funds—Pittsburgh loaned the authority $2 million to get started. There was a $505,000 grant-in-aid made by the state, which pioneered state aid to municipalities for sewage works planning.

In October 1955, the authority finally got its construction money, and in a big way—an unprecedented $100-million bank loan from a group of 25 banks headed by Pittsburgh's Mellon National Bank & Trust Co. Terms: 2¼% for secured funds (invested in federal government securities) and 2¾% for unsecured funds for a maximum of



It drains rugged terrain in Pittsburgh, 69 other communities.

Sewage Works for Pittsburgh

four years during which the authority could decide when to sell the revenue bonds that would provide the long-term financing. The loan made it possible for the authority to advertise construction contracts worth $80 million ($20 million was earmarked for interest charges, repayment of loans, engineering and administration, legal fees, and rights-of-way). Meanwhile, the borrowed money was reinvested in short-term government securities with a matching and generally better interest rate, earning money for the authority while idle.

The money wasn't idle long. Thirty-three contracts totaling $79.6 million were awarded to 20 contractors in January 1956, and in May the first $25 million worth of revenue bonds were sold (at 3.35%) to finance the first construction.

But before construction came the research and development. Here's how some of it was done.

Prof. L. M. Laushey, then at Carnegie Tech in Pittsburgh, studied the 165 shafts through which sewage would have to drop vertically to the deep interceptors in tunnels and cuts beneath the industrial city and its suburbs. Model studies showed sewage would flow best down the shafts from circular inlet tanks into which sewer lateral flow entered tangentially to form a strong, smooth vortex (ENR Mar. 5, 1953, p. 38). Precise shaft-to-tank relationships and tank entrance dimensions were then recommended to the designers.

Model studies were also used to check design of the system's 250 diversion structures that connect the ends of intercepted sewers with the top of downshafts. These structures were built along the river banks throughout the project's 205-sq-mi area. They now divert all dry weather flow and storm flow up to 250% of dry weather flow down the shafts and into the deep interceptor sewers. When storm flows exceed 250% of dry weather flow, the excess is discharged to the rivers through tide gates designed to open under pressure from within.

The authority's greatest research project of all, of course, was Chief Engineer John Laboon's untiring efforts to prove out his sludge concentration theories—to come up with a process short of digestion to dispose of the sludge from a 150-mgd primary treatment plant.

It amounted to years of investigation. Mr. Laboon noted how heated sludge, starting to digest, would float into quite a compact mass on a relatively clear fluid, which he calls a subnatant, after about five days in a tank. Why go on with the digestion process and tie up that tank for 30 days or more, he asked. Why not drain the subnatant from under the floating sludge and send the concentrated remainder to an incinerator to be burned along with pulverized coal?

First, he had to see what concentration the sludge flotation would produce; next, how to move sludge of that concentration to an incinerator.

Laboratory work was done first at test-tube scale, and redone to the satisfaction of the authority's research staff. Then John Laboon took over a small frame building within U. S. Steel's nearby Homestead works and set up a crude, but adequate, pilot plant for primary treatment and aeration. Taking sewage from a sewer that discharged Homestead's sewage across the steel mill's property, he set up tall, slim tanks of a practical (13 ft) depth and kept them heated to 95 F while watching primary sludge concentrate in them through transparent plastic walls (ENR Oct. 11, 1951, p. 30).

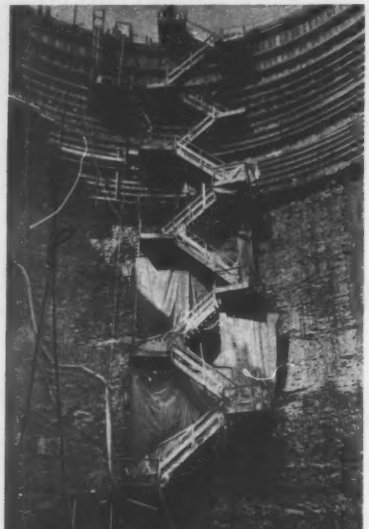
It worked well. The sludge concentrated readily to 20% solids. Virtually all the solids were floated to a relatively compact 2- to 3-ft thickness on top of a clear subnatant within five days.

How to move it? Screw conveyors would work; conventional pumps would not. A progressing cavity pump (Moyno, by name) was tried, and it worked. In this type pump a helical rotor turns within the double-helical interior of a cylindrical stator. It's

From rugged construction . . .

SEWAGE TUNNELS included some very rough going in hard rock, in coal and in filled ground. High strength concrete pipe went into tunnels as precast liner.

OPEN CUTS were sometimes in streambeds as lines cut through developed areas.



END OF LINE was excavation for novel circular pumping plant at the sewage works.

a self-priming, positive displacement device that will move all sorts of dense fluids or plastic solids. As its rotor turns, it moves the material along between rotor and stator. It tends to homogenize the material it moves.

John Laboon was asssured through his pilot plant that he could concentrate primary sludge in deep tanks to 20% solids; that he could pump this relatively solid material; and he figured he could burn it. His research gave him a whole year's records on the concentrations and volatiles achievable.

This put the problem of designing a full-scale plant squarely up to the authority's consultants, Metcalf & Eddy. And the Boston firm was every bit up to the challenge.

The late Frank Flood, M&E partner, set wholeheartedly about the task and by late 1953 designs for the structures and the hydraulics of the Laboon process—plant scale—were ready.

What came off the drawing boards was new—like nothing Metcalf & Eddy had ever done before. Alongside a conventional primary treatment plant, they had designed a closed system for sludge handling—heating, concentration and burning—based on concentration to an average of 18% solids.

The dollar saving over construction of sludge digesters and filters for dewatering digested sludge has been estimated by the authority at close to $2.5 million, and annual savings are figured at $150,000.

Briefly, the sludge handling begins in a heater building where raw sludge passed through heat exchangers is warmed to 95 F. Then it goes to fill one of 10 rectangular concentration tanks, where it stays five days. The tank is 105 x 30 ft in plan, about 15 ft deep, completely enclosed and insulated. (For further details, see ENR Oct. 1, 1953, p. 30.)

In 24 hours the solids float; the subnatant is withdrawn after five days and the solids drop to a saw-toothed bottom in the tank where screw conveyors in V-notches move it to one end. At that end, suction of a 100 gpm Moyno pump pulls it from the tank and sends it along to the incinerator building. Ventilators in the concentration tank blow its foul air to the furnaces. There both the sludge and its odors are to be burned along with pulverized coal.

Thus was the design fashioned after findings of the R&D.

And with the R&D on the sludge disposal process done and its results designed into working plans, construction could be started. But even as construction began there remained some significant research into materials of construction. Principally, there was the test program on pressure pipe to be used as sewer tunnel lining.

Accelerated erosion tests were made with a sand blasting machine on sections of concrete pipe made with various aggregates and by various processes (ENR Oct. 2, 1958, p. 30). Concrete strength and closeness of a good, hard aggregate to the surface of the pipe proved to be the significant factors of erosion resistance. A 7,000-psi concrete was chosen for pipe with 7-in. wall thickness at 72-in. dia (as opposed to the 6-in. thickness ASTM sets for the same size pipe in 4,500-psi concrete). Steel end rings and rubber gaskets were adopted as standard for all concrete pipe of 24-in. dia and larger.

Lock Joint Pipe Co. and Allegheny Concrete Pipe Associates set up plants to produce the project's 24- to 126-in. tunnel lining pipe. The authority kept inspectors checking for infiltration, absorption, density and strength as the pipe was cast and steam cured. Strength and density checks were run on 0.5% of all pipe. Infiltration tests were made on 1% (no visible infiltration permissible after 24 hours under 100-ft head). Absorption was not allowed to exceed 6%.

While cast-iron pipe and asbestos-cement pipe were laid in open-cut sewer work and in certain river crossings along the system, the 7,000-psi reinforced concrete pressure pipe went into all the tunnels and all open-cut sewer work 24 in. and larger. Placed, aligned and jointed, it was backed up with 3,000-psi concrete pumped or dropped down the system's downshafts and placed (about 1.2 cu yd per linear foot of tunnel) between the pipe and the faces of the tunnel.

In the construction of this project,

tunneling was unquestionably the toughest part. It varied from easy, to difficult, to miserable as it went from hard rock, to coal, to mixed face.

Always along the river fronts, the tunnelers were plagued with water. Last April, floods trapped five miners in an air lock while John Laboon rushed emergency use of one of his sewage plant's still untried pumps to drain the tunnels and get them out safely (ENR Apr. 30, p. 27).

Sometimes in coal, the tunnels had to be checked constantly for gases, and despite checking and ventilation explosions occurred—none fatal.

Often in bad rock, soft ground or mixed face, the tunnel headings in many places had to be held by closely spaced steel roof supports, liner plates and spiling. Progress was often no more than 2 or 3 ft per day, and necessary air pressures in places ranged 10 to 17 psi.

In the 39 miles of open-cut pipe-laying, stream beds were often used as right-of-way to avoid the densely developed lands along shore. Pipe laid under streambeds was placed and jointed with utmost care to avoid infiltration.

At the plant itself, on the shore of the Ohio, the neatest construction trick was excavation of the 120-ft-deep, 100-ft-dia hole for the circular pumping station. This imposing excavation went about half way down through water-bearing soil with sheetpiling held by sectionalized steel rings. For the rest of the way, excavation was in rock.

A 5-ft-thick slab went on the bottom of this cylindrical hole, 3-ft-thick walls were concreted around it, then the inner wall to separate annular pump from central wet well went up.

The remainder of plant-site construction was not unusual. A granulated slag fill was rolled to form a base for the settling tanks of primary treatment and the sludge concentration tanks of the Laboon process. The site did present that fairly common problem of excavating old concrete and brick wall foundations of demolished industrial plants.

Now the problem is getting it all to work smoothly. And this is no small problem. There are always bugs to be worked out of a new sewage treatment plant. And this one is not only new, but different—totally unconventional in its collection system as well as its sludge-disposal process.

The downshafts are working in complete accord with model-test findings.

The sludge is concentrating to the 18% adopted as the design figure, and the Moyno pumps are moving it successfully to the incinerators. Only the incinerator has been causing serious trouble, and this trouble is due to be surmounted. The problem is to get all four furnaces in the incinerator burning the sludge at above 1,300 F—to burn it completely and emit no badly objectionable stack odors.

As the many difficult problems of start-up have been narrowed down to the critical problem of stack odors, the Pittsburgh Sewage Treatment Plant has come to do the job for which it was planned, designed and built. The difficult selling job that launched the project and all the R&D that made it something truly different among sewerage projects should soon pay off in 50% removal of biochemical oxygen demand (BOD) to assure the Ohio a satisfactory dissolved oxygen content below the plant. Removal of settleable solids will improve quality of the river's water. And chlorination is killing the bacteria of Pittsburgh's sewage.

It was an extremely difficult job from all aspects.

From the financial aspect, it was one only inspired communities would tackle —and Pittsburgh's officialdom provided the inspiration.

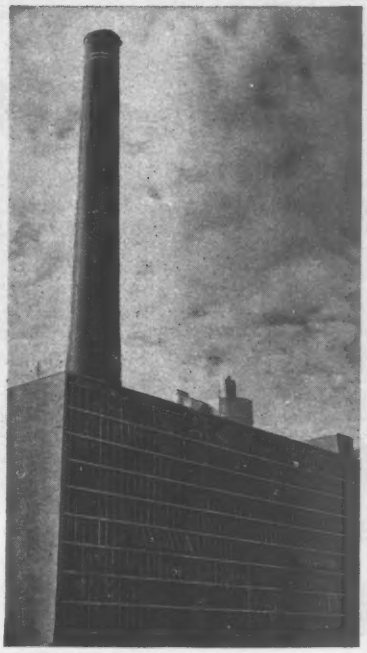
From the design point of view, a courageous consulting firm staked its considerable prestige on results of R&D in an unusual sludge-disposal process.

From the construction point of view, there were some of the worst imaginable tunneling conditions.

And now from the operations point of view there are the difficulties of ironing out roughness of a new and different plant.

This project had all the drama that politics, strikes, floods and explosions can give a job. A difficult job, pushed through, the gayly colored plant stands in attractive relief against a drab industrial river front.

. . . To finished product



INCINERATOR is the end of the process and last remaining step to be ironed out.

ADMINISTRATION BUILDING houses department where charges are collected.

PLANT STRUCTURES are architecturally pleasing. Glazed brick and paints chosen are gayly colored, and the spacious site is well landscaped.

Huge steel cantilever will support crown of movable dome roof for Pittsburgh's new auditorium.

Constructing a Unique Auditorium

High on a hill overlooking Pittsburgh's Golden Triangle, the city's $20-million Public Auditorium sits roofless, waiting for steel.

This key redevelopment project progressed rapidly until the steel shortage struck. And steel is needed for its big movable dome roof and the huge cantilever that supports it.

Building such an unusual structure would have been tough even under ordinary conditions. Pennsylvania law prevents the Public Auditorium Authority, owner of the structure, from placing responsibility for construction in the hands of one general contractor.

The law requires at least four separate contracts to be let. The authority found it necessary to award eight major contracts, none of which exceeds 40% of the total construction cost.

Chaos would have resulted if the work of the different trades had not been successfully coordinated. For this project calls for unprecedented structural work and complex mechanical and electrical controls.

The auditorium is part of a cultural center being constructed in the redevelopment of Pittsburgh's Lower Hill area. It will be used as an open-air amphitheater and sports arena, convention hall and exhibit center. It will have 9,280 permanent seats, but will accommodate nearly 14,000 for some events, such as boxing and political rallies. It will be air conditioned. The auditorium, its mall and its parking area for 1,700 cars will occupy about 20 acres.

The seating arrangement is unusual: One section of 2,100 permanent seats covers the stage. This section can be tilted out of the way hydraulically when the 119x64-ft stage is used for theatrical productions. The seats will be needed for basketball, hockey and ice shows.

Even more unusual is the movable dome roof. Nearly circular in plan, it spans 403 ft across the seating area in one direction, 413 ft in the other, and has a rise of 116 ft (ENR Jan. 30, 1958, p. 30). The dome will be supported at the crown by a 260-ft-long, curved, steel cantilever anchored outside the auditorium.

The dome is comprised of eight sections—six movable, two fixed. The fixed sections are located next to the huge cantilever, which carries two pivots, 10 ft apart (accounting for the 10-ft difference in the diameters of the auditorium). Each pivot is used by three movable leaves on opposite sides of the auditorium.

At the push of a button, the movable leaves will roll on rails anchored atop a 20-ft-wide concrete ring girder that encircles the auditorium. When the roof is closed, the small gaps between overlapping parts will be sealed by the automatic tensioning of cables that will pull neoprene gaskets into bearing against stops on adjoining components.

The leaves are framed with structural steel. Each has seven main ribs —30-in. wide-flange beams. They support 8- and 10-in.-deep purlins.

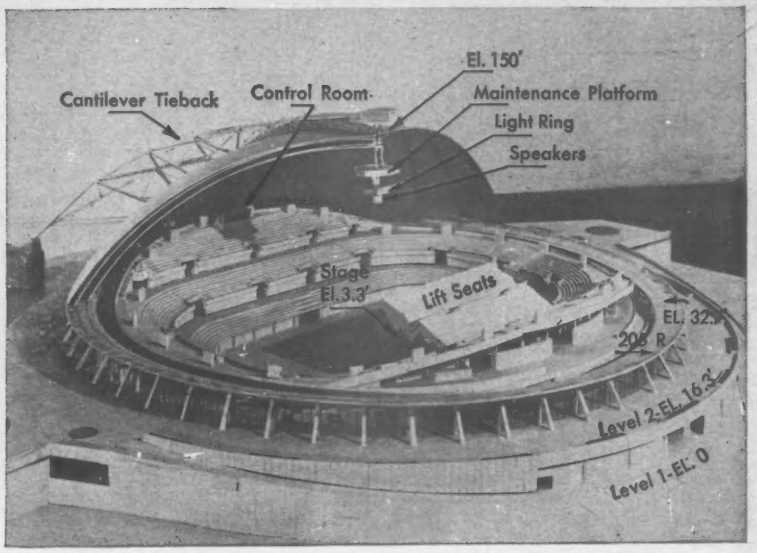
Acoustical metal panels will be attached to the under side of the ribs. The roof will be metal deck. On top of the deck will be a vapor barrier, two 1-in. layers of rigid insulation, roofing felt and an exterior facing of Type 302 stainless steel.

Principal component of the curved steel cantilever about which the movable leaves pivot is a box girder about 8 ft wide and 17½ ft deep. It rises more than 110 ft above its abutment and projects 205 ft into the auditorium. The box girder carries in its interior electrical wiring for control and operation of the roof, and for the lighting and sound systems. Trussed tiebacks, also steel box sections, extend from near the top of the girder to an anchorage 110 ft beyond the girder's abutment. The cantilever contains 1,400 tons of steel.

The auditorium will have three working floors in addition to the concrete stands. Entrances are provided at grade to both the first and second levels, which have a 16-ft difference in elevation. The designers accomplished this by taking advantage of the natural slope of the site.

At the first level will be the arena, exhibit areas, locker and dressing rooms, the main mechanical room and storage space. The main entrance, promenade deck, offices and meeting rooms will be on the second level. At the third level (at about the height of the ring girder, 16½ ft above the second level) will be the control booth and access to stands.

Until the steel strike, construction



Seating, including lift section, will accommodate 14,000.

Under Eight Separate Contracts

on this complex project proceeded smoothly, despite the absence of a general contractor. Edward Fraher, executive director of the Public Auditorium Authority, had the foresight to set up an organization for coordinating all the contract work.

Mr. Fraher brought in H. Rey Helvenston as superintendent of construction. This title carries many more responsibilities and duties on this project than it does on ordinary projects. Mr. Helvenston is an engineer with broad construction experience and once was the head of a contracting company. He takes over to a great extent the coordinating role of the missing general contractor. He also doubles as resident engineer for the owner, architect and consulting engineers.

It is Mr. Helvenston's job to deal with field problems—to work them out with the contractors in an orderly sequence, eliminating ambiguity, overlapping tasks and interferences.

As far as possible, operations are planned in advance to avoid delays and unnecessary extra costs. For one thing, combined drawings are made that show all the contractors' work. This enables them to discover and eliminate in advance any interferences between the installations and operations of different trades.

Models are used wherever the need is indicated.

Field inspection is handled along functional lines. The inspection staff, in general, has been trained by Mr. Helvenston, who prefers older men who have done the type of work they are assigned to inspect, rather than career inspectors.

The eight prime contractors were notified to start work in April, 1958. First job was removal of ½ million cu yd of clay, shale and old foundations.

A wet summer and cold winter slowed only slightly the extensive underground work that followed. Included were sewers, concrete retaining walls, column footings and 1,500 lin ft of tunnels. The tunnels will distribute fresh air, accommodate plumbing, house steam and chilled-water piping for heating and air conditioning, and carry electrical conduits. Little work on the rest of the auditorium could proceed until this underground construction was completed.

Concreting of the second-level promenade deck, which encircles the auditorium, had to be carried out in cold weather, when many cycles of freezing and thawing could be expected. Heat was required to prevent the concrete from freezing early in the morning and just before nightfall. The contractor used high-early-strength cement when low temperatures or rainstorms that might cause settlement of soil under the shores were anticipated. Under ordinary circumstances, the extra expense was avoided.

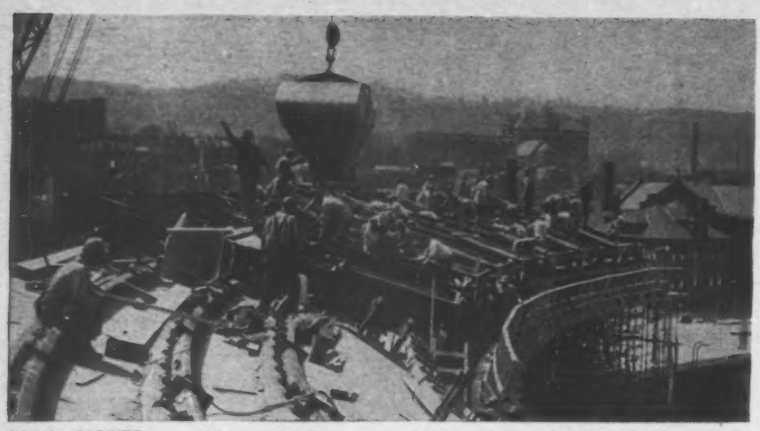
Forms for the 50-ft-wide promenade slab were made of plywood. They were supported on 2x4's spanning between adjustable-length steel beams. The relatively large span of these beams reduced appreciably the number of 4x4 shores needed. This arrangement eliminated a forest of lumber and avoided a great deal of the tedious work of installing shoring sills to prevent washouts in heavy rain.

To keep the fresh concrete warm in cold weather, oil-burning salamanders were inserted under the formwork inside an enclosure formed by hanging tarpaulins around the outside. Insulation covered with tarpaulins protected the top surface of the concrete.

When the concrete had gained sufficient strength, the forms and shores were removed for re-use elsewhere. The contractor then re-shored the promenade slab with steel-pipe scaffolding so that he could support the falsework for the concrete ring girder on the second-level deck. The superimposed load was estimated at 7 tons per lin ft of girder.

The ring girder was designed to be continuous over four 26-ft spans. It is supported on 48 concrete A-frames and banked at a 13-deg angle to resist the thrust of the dome. (Estimated force normal to rails from each of the 12 or 13 wheels per moving roof leaf is 30 kips when the roof is closed.) Expansion joints were provided between the continuous sections, and double columns located at the junction. It was logical, therefore, to concrete the girder in four-bay lengths.

Two complete sets of forms were built, intended for seven uses. Since the 20-ft-wide banked girder is irregularly shaped in cross section, with a maximum depth of about 5 ft, the plywood forms consisted of several skew planes—



RING GIRDER, on which roof rolls, is concreted in four-bay lengths. Steel templets insure accuracy of rail haunches and bolts.

WELDER anchors rail clip to base plates. Neoprene gaskets at bottom of movable roof will be pressed against a pipe-top plate (right) to seal out weather.

inner and outer fascia and two bottom slopes. They were supported at 16-in. intervals on radial wood joists. Wood trusses transmitted the load from these joists to 2x8 laminated wood beams along the curve. Shores were steel-pipe scaffolding.

The inclined and vertical legs of the A-frames were formed at the same time as the girder.

All forms had to be set accurately to the required elevation and alignment. Where the shores could not be supported on the promenade deck, granulated slag was spread on the ground, which was roughly graded, to level up under the shore sills.

The slope of the top surface of the girder was flat enough to be shaped without forms. However, the plans called for four banked annular haunches atop the ring girder to carry the rails for the movable roof. (The fourth rail, at the inner edge of the girder, is not for a roof leaf but for two rolling work scaffolds for electricians and ceiling installers—and for maintenance work later. Wedge-shaped and curved, these steel-truss scaffolds, like the roof sections, will pivot about the tip of the steel cantilever. Each is 260 ft long and 55 ft wide at the ring girder. At the termination of the job, one will be scrapped, the other dismantled and saved for maintenance work.) The raised portion of the ring girder required forms.

To insure uniform setting of the 5,000 sloping bolts for the rails and the haunches, the steel contractor furnished eight templet frames. These were supported on the radial joists with unequal-length angle posts to obtain the desired slope. Curved wood forms for the haunches and templets for the bolts were attached to the bottom of steel channels extending below the frames. The bolt templets consisted of paper sleeves set inside pipe spacers welded to steel plates, which, in turn, were welded to the channels.

Drains will carry roof rainwater through the ring girder, conducting the water along the vertical columns of the A-frame to an underground sewer.

Typical stadium construction was used for the concrete risers and treads of the stands. Forms were metal pans.

The concourse slab connecting with the second-level promenade was constructed with hollows, to obtain greater thickness without great increase in weight. The hollows were formed with paper tubes.

Preplanning paid off here too. Electrical conduit had to fit into the spaces between the tubes. In the preplanning studies, the conduit was laid out to allow curves that would not make wire pulling difficult. Tubes were shortened, in a few cases. This increased the volume of concrete slightly, but permitted easier conduit turns.

While the ring girder and stands were being concreted, erection of the 260-ft-long steel cantilever girder and its tiebacks was started. The steel girder is expected to transmit a maximum thrust of 7,210 kips to its abutment, and each of the two tiebacks may carry as much as 3,850 kips in tension.

To transfer the huge thrust from the box girder to the concrete foundations, a dense system of reinforcing bars was incorporated in the abutment, inside and outside the girder cells. In addition, 24 five-inch aluminum electrical conduits had to be accommodated inside. The congestion made it difficult to concrete the abutment. Nevertheless, workmen managed to crawl or stand in the tight space, spading and vibrating the concrete into place as it was fed to them from a 1-ft-dia hose.

The huge box sections for the girder and tiebacks were shop welded. All welds were stress relieved by heating in an oven, then machined, subdrilled and retested for soundness. Field welding was done with nickel-alloy rod. These welds were peened to relieve residual welding stresses. About half the length of girder, tiebacks and ribs of the two fixed roof leaves had been erected when the steel supply gave out.

Mitchell & Ritchey, Pittsburgh, are the architects. Ammann & Whitney, New York City, are the consulting engineers on the movable roof, ring girder and podium. Robert A. Zern, Pittsburgh, is the consulting structural engineer on the portion of the auditorium inside the ring girder. Carl J. Long, Pittsburgh, is the consulting engineer for electrical work other than that for the roof, and Dzubay & Bedsole and John Mullin & Associates, Pittsburgh, the mechanical engineers.

Dick Corp., Large, Pa., holds the general contract covering concrete and earth work. American Bridge Division, U. S. Steel Corp., is the steel contractor. Limbach Co., Pittsburgh, is doing the heating and ventilating and installing the stainless steel roof. E. C. Ernst, Inc., is the electrical contractor, and Wayne-Crouse, Inc., is handling plumbing and drainage; both are Pittsburgh firms. Seating contractor is American Seating Co.

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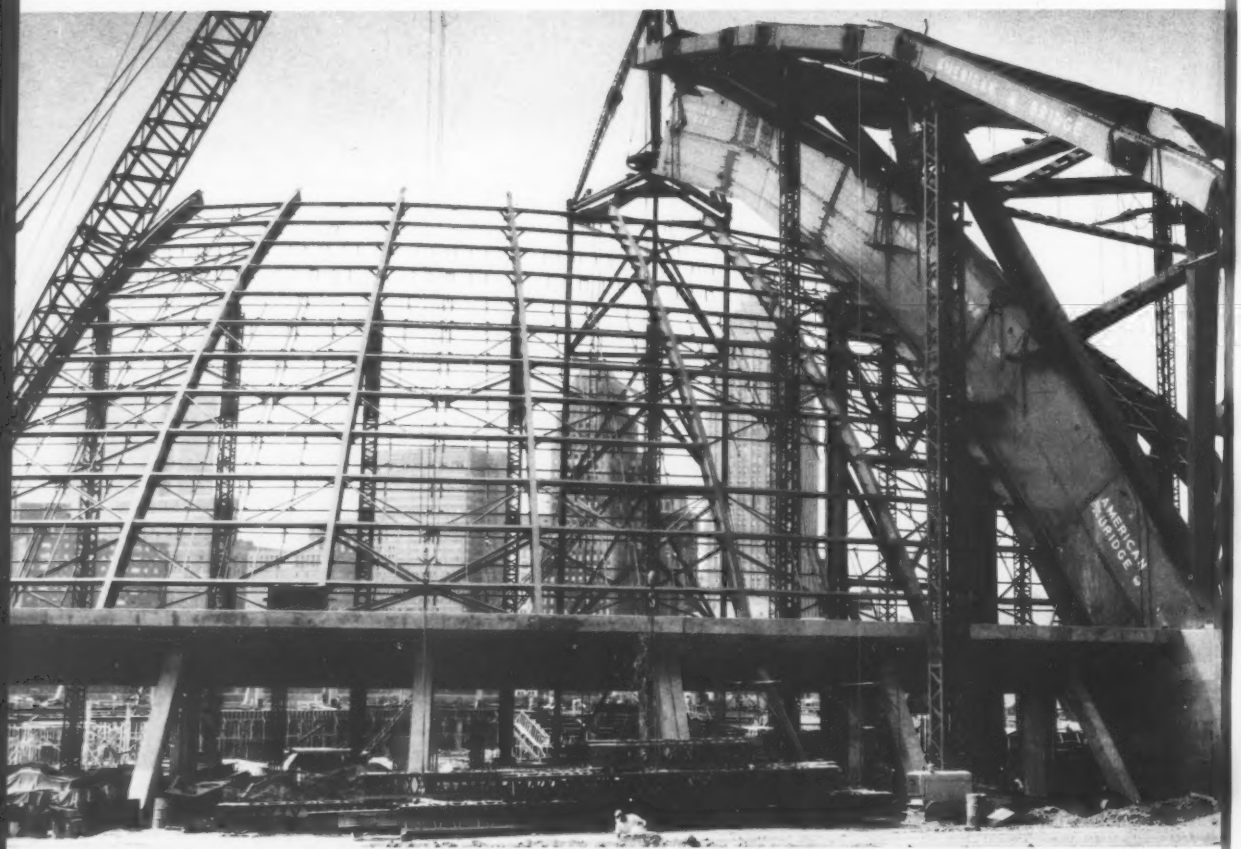
REPORT

Pittsburgh rebuilds in steel

See the following 11 pages

11 Pittsburgh buildings—2 new bridges fabricated and



Unique Public Auditorium—Can be used as a convention hall, an open air amphitheater, a sports arena, and an exhibit center. American Bridge is now erecting the structural steel which was difficult to fabricate because of the circular design and cantilever construction which supports the movable stainless steel dome.

No hemming and hawing on this job—Four Gateway Center, newest of the Gateway buildings. American Bridge put up the structural framework in three months and 17 days—fast and on schedule. And once the steel was in place, there was no hum-drum period of waiting . . . for steel not only goes up faster, but it provides immediate full strength, permitting other trades to proceed rapidly.

(Credit list for all projects in this report on last page.)

ed and erected by American Bridge

Judged by its population, Pittsburgh and Allegheny County have built more new skyscrapers, bridges, highways and public works in the last few years than any similar area in the country.

Starting with the Mellon-U.S. Steel Building, Pittsburgh's redevelopment program swung into action. Soon the riveters and welders were erecting steel for three Gateway Center Buildings, the Alcoa Building and Mellon Square Parking Garage. These were followed by the State Office Building, Bell Telephone Building and the Porter Building.

Still under construction are the fourth Gateway Center Building and the huge new Public Auditorium with Stainless Steel dome.

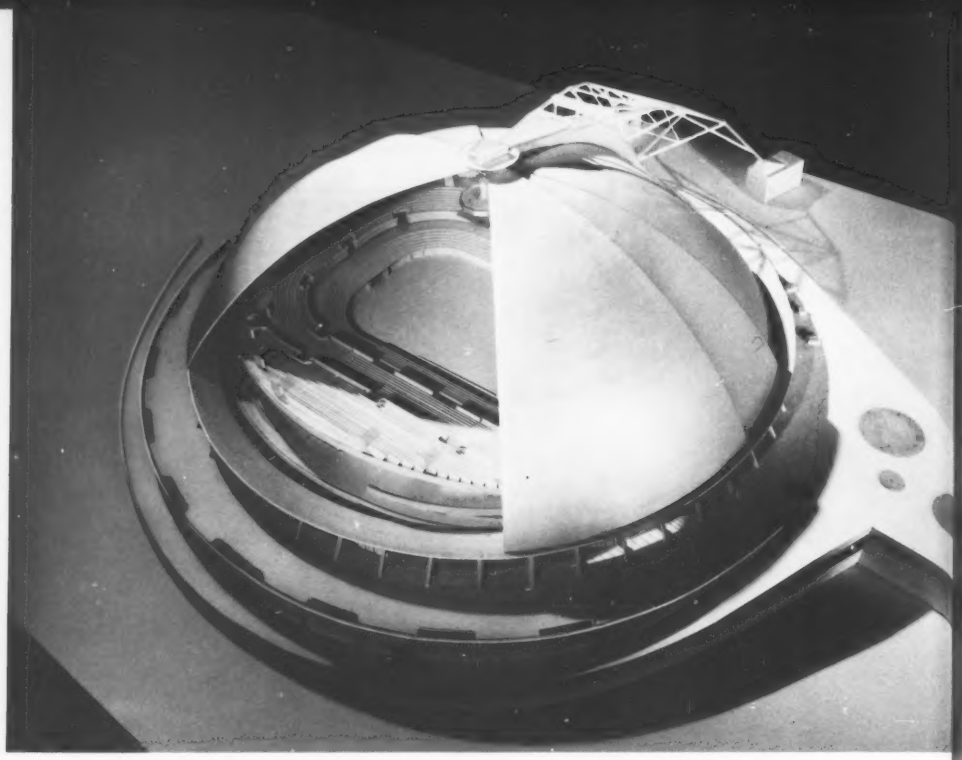
Two new bridges complete the list. The double-deck Fort Pitt Bridge over the Monongahela is already in use and the Fort Duquesne Bridge across the Allegheny is under construction.

United States Steel, through its various divisions, supplied much of the basic steel and many of the finished steel products used in these structures. The American Bridge Division fabricated and erected the structural steel in each building mentioned and in both bridges.

Other divisions such as American Steel & Wire and Universal Atlas Cement supplied products for the many new highways and the sewage disposal system.

New Gateway to the West—Fort Pitt Bridge carries the Lincoln and Wm. Penn highways across the Monongahela River at the Point. It is an 8-lane, double-deck structure with a tied-arch span 752 feet long. Erected by American Bridge Division. The Fort Duquesne Bridge, of similar design, is under construction over the Allegheny River.

USS **American Bridge Division of United States Steel**

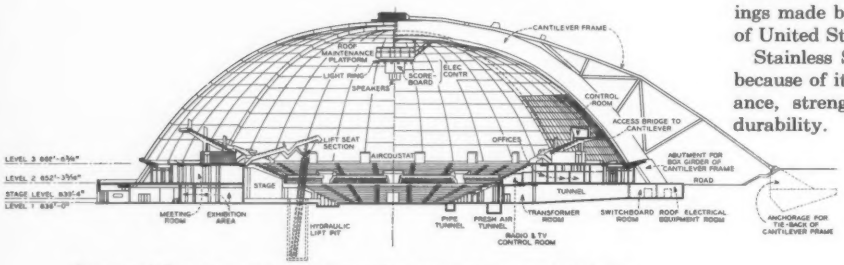


Stainless steel retractable dome highlights the new Pittsburgh public auditorium

The unusual and exciting Public Auditorium for Pittsburgh and Allegheny County will accommodate up to 13,600 spectators. The unique feature of the auditorium is its gleaming retractable Stainless Steel dome—the first of its kind ever built. The mammoth movable roof, some 415 feet in diameter and 136 feet high makes possible a spectacular open air stadium that can be converted to a weatherproof auditorium in 2½ minutes.

The dome is divided into eight sections. Two of these are stationary and six are movable. About 166,000 square feet of Stainless Steel sheets will be used to make the roof. Each of the movable segments will swivel on long-wearing Stainless Steel bearings made by the American Bridge Division of United States Steel.

Stainless Steel was selected for the dome because of its lasting beauty, weather resistance, strength, ease of maintenance, and durability.



Structural Steel supports the dome—The cantilever frame which is the main support for the leaves is composed of a curved box girder about 8 feet wide and 17½ feet deep, with a system of tie-back members extending from the anchorage point near the ground line up to near the top of the box girder. The dome will have no interior supports. Rather, the leaves will rest on rails laid on a ring girder. The structural steel cantilever box girder arm and tie truss weigh about 1,400 tons.

USS

United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

Structural steel goes up fast in Pittsburgh's newest buildings

Stainless Steel provides the glamour for many of Pittsburgh's new buildings but the backbone and ribs are structural steel. Thousands of tons of USS Structural Shapes and Plates form the strong framework for 11 new buildings, two new bridges and numerous other redevelopment projects.

Pittsburgh pioneered the steel building with curtain walls of stainless steel or porcelain enamel on steel sheet panels. This type of structure is economical. It goes up in a hurry and provides more usable floor space per dollar spent for construction. Other cities followed suit until today a building looks its best when it's made of steel. For information, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS Structural Steel framework for the new Pittsburgh Auditorium. 3,425 tons are being used including USS TRI-TEN High-Strength, Low-Alloy Steel for members where extra strength is needed.

(AT LEFT)

Three months and 17 days was the time it took to erect the 6,400-ton structural steel framework of the Four Gateway Center Building. When a structure is built of steel, everything moves fast.

USS

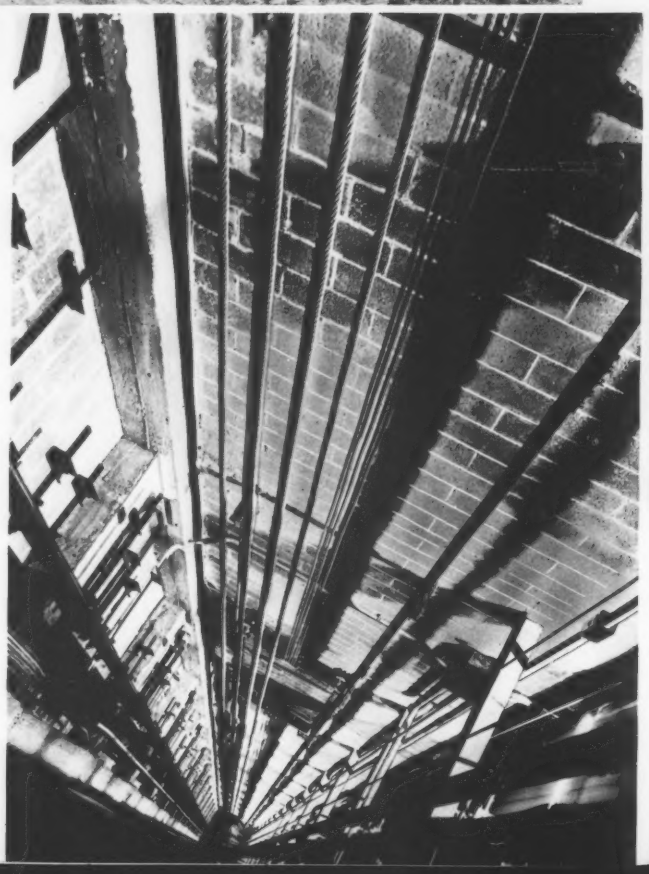
United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

Muscles of steel for Pittsburgh's jet-plane runway, bridges and buildings

Concrete culvert pipe for the jet-plane runway is reinforced with heavy-duty USS AMERICAN Welded Wire Fabric. Triple cages of reinforcing provide extra strength for supporting a 90-foot fill. Concrete pipe reinforced with steel means long life, great strength and durability, plus low maintenance cost.

The new Allegheny County sewage disposal system contains over 30 miles of reinforced concrete pipe. All this concrete pipe, ranging in sizes from 24 to 126 inches, was reinforced with USS AMERICAN Welded Wire Fabric.



Over 17 miles of USS TIGER BRAND Elevator Rope speed tenants up and down in Pittsburgh's first Gateway Center Buildings. Operating speeds are as high as 800 feet per minute, so the elevator ropes must be strong, flexible, and durable. Tough TIGER BRAND Elevator Ropes meet these requirements and give long, long service in the bargain.

The
Mt. V
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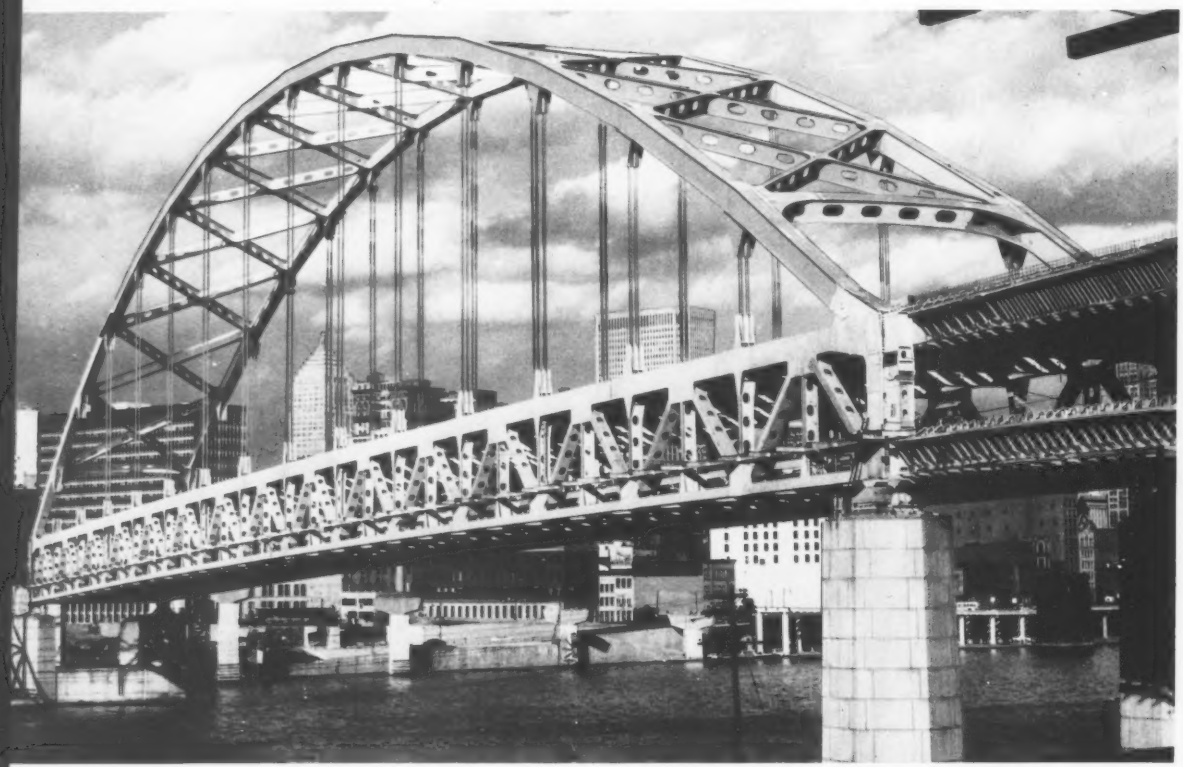
The new double-deck Fort Pitt Bridge spans the Monongahela River and connects the Golden Triangle with a double-deck tunnel through Mt. Washington. Traffic will soon be able to cross Pittsburgh in half an hour without stopping for traffic lights. The new bridge is unique in design. It is a double-deck, tied-arch span, 752 feet long. Two 4-lane roadways are supported by 112 prestressed USS TIGER BRAND suspender ropes, each 3¼ inches in diameter. A total of 8,960 feet of suspender ropes were used in the bridge.

USS

American Steel & Wire
Division of
United States Steel

High-strength USS Steel saves weight and money in Pittsburgh bridges and highways



Pittsburgh's Fort Pitt Bridge was built with a steel with a reputation—USS MAN-TEN Brand High-Strength Steel. About 5,800 tons of MAN-TEN Steel were used in the 750-foot span. This steel is about 50% stronger than structural carbon steel and saves weight and money.

The bridge is regarded by engineers as the most unusual structure in the entire Penn-Lincoln Parkway System. It is a double-deck, tied-arch design and will carry four lanes of one-way traffic on each level.

For the heavily stressed members, high-strength steel answered the problem of getting higher allowable stress per dollar by avoiding unnecessary weight, USS MAN-TEN Steel was used in all chords, most diagonals and verticals, and all portal members including end floor beams.

Other Pittsburgh projects using USS MAN-TEN High-Strength Steel include the soon-to-be-erected Fort Duquesne Bridge involving 3,220 tons, sections of the Penn-Lincoln Parkway involving 4,250 tons, and the Crosstown Parkway, 1,554 tons.

USS TRI-TEN High-Strength, Low-Alloy Steel is being used for highly stressed members of the Public Auditorium.

USS

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

USS Steels are doing the difficult, unglamorous jobs, too

Not all parts of the Pittsburgh rebuilding fall in the class of "tourist attraction," of course. Even the most spectacular structures have unseen parts which make them work. The ductwork in the monumental buildings, for example, will never be seen by anyone but the heating engineers. But here, too, the finest steel products are at work—USS Galvanized Steel Sheets. They provide strength and economy; their consistently high quality of galvanizing makes them easy to work with, provides long life with little maintenance.

USS Galvanized Steel Sheets also do a dependable job in the drainage products throughout the vast network of super roads in the Pittsburgh area. Corrugated steel culverts and sectional arches provide drainage with the strongest possible support under everything from small access roads to six-lane Interstate highways.

United States Steel Corporation—Pittsburgh
American Steel & Wire—Cleveland
National Tube—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

Penn-Lincoln Parkway contains five miles of non-skid slag concrete pavement, requiring 125,000 tons of slag aggregate. Another 143,000 tons were used for the sub-base to stabilize pavement.

New Pittsburgh sewage treatment plant of the Allegheny County Sanitary Authority. Practically all structural concrete was made with USS Blast Furnace Slag aggregate which provided high ultimate strength.

Mellon Square Park and a six-floor underground parking garage. Built with reinforced concrete in which all the coarse aggregate was USS Blast Furnace Slag.

Greater Pittsburgh Airport. Almost 1,000,000 square yards of concrete and bituminous paving included air-cooled blast furnace slag as the coarse aggregate where concrete failure could not be tolerated.

Mountains of USS Blast Furnace Slag help build a beautiful Pittsburgh

One of the most spectacular sights you can see coming into Pittsburgh at night is a cascade of molten slag being dumped down a high bank. It looks like lava from a volcano.

A slag pile, once considered as a monstrous heap of waste, was discovered to be a wonderful source of construction material.

Produced in various sizes, air-cooled blast furnace slag can be used as aggregate in modern highways, in concrete structures and as railroad ballast.

An expanded form of slag is used in making lightweight concrete blocks. Three of these blocks weigh no more than two of the conventional variety. They're easier to handle and they save construction dollars.

Granulated slag, formed by a water bath process, is widely used in making portland cement and for building stable highway bases.

To get the complete story on USS Blast Furnace Slag, and how it reduces construction costs, write to United States Steel, Room 2820, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

Fort Pitt Restoration at the historic point where the Monongahela and Allegheny Rivers merge to form the Ohio. 10,000 tons of USS Granulated Blast Furnace Slag were used as permanent fill in the flag bastion to a depth of 20 feet.

USS United States Steel

More power to Pittsburgh

The redevelopment of Pittsburgh's downtown district brought the need for more power in this area. The Duquesne Light Company solved the problem by installing a new substation downtown and supplying it by two 69 KV feeders from two existing power sources to assure reliable operation.

The transmission system chosen to handle 100,000 KVA was a high-pressure oil pipe-type cable. Basically, this system consists of seamless steel pipe, joined by welding, functioning as a conduit through which are drawn three solid-type paper-insulated oil-impregnated cables. The remaining space within the pipe is filled with insulating oil kept at a pressure of 200 psi. The pipe-type cable system has a lower failure rate than any other high-voltage cable system in use today.

USS NATIONAL Seamless Pipe was used throughout this extensive installation which included three river crossings and many miles of pipe through difficult areas. Jobs like this call for exceptionally strong, flexible pipe to resist internal and external stresses. NATIONAL Seamless Pipe is doing its work well in bringing more power to Pittsburgh.

Preparing to weld pipe for Ohio River crossing. Pipe has a heavier wall to provide additional margin for burning in case of a line-to-ground fault in a river section.

USS **National Tube Division of United States Steel**

AMONG THE ORGANIZATIONS RESPONSIBLE FOR PROJECTS MENTIONED IN THIS ADVERTISEMENT ARE:
ALLEGHENY COUNTY SANITARY AUTHORITY—Owner: Allegheny County Sanitary Authority. Architect: Selli and Flynn, McKeesport. Consulting Engineers: Metcalf and Eddy, Boston, Mass. Gen. Contractor: James McHugh Construction Co., Allegheny Contracting Industries, Johnson-Drake and Piper, Inc. **POINT PARK**—Owner: State of Pennsylvania, Dept. of Forests and Waters. Landscaping Architect: John A. Renner, Pittsburgh. **MELLON SQUARE**—Owners: City of Pittsburgh; The Public Parking Authority of Pittsburgh. Architect: Stiles and Robert Clements and Associates, Los Angeles, Cal. (garage). Mitchell and Ritchey, Pittsburgh (park). Landscaping Architect: Simonds and Simonds, Pittsburgh. Gen. Contractor: The H. F. Ferguson Co., Cleveland, Ohio. **AIRPORT RUNWAY**—Owner: Allegheny County, State of Pennsylvania. Designer: E. G. Messner, Chief Engineer. Gen. Contractor: Harrison Construction Co., Pittsburgh. **FOUR GATEWAY CENTER BUILDING**—Owner: Equitable Life Assurance Society. Gen. Contractor: George A. Fuller Co. Architect: Harrison & Abramovitz. Structural Steel Fabricator and Erector: American Bridge Division. Stainless Steel Fabricator and Erector: Limbach Company. Structural Engineers: Edwards & Hjorth. **FORT PITT BRIDGE**—Owner: Pennsylvania Department of Highways. Bridge Designer and Consultant: George S. Richardson of Richardson, Gordon & Assoc. Steel Fabricator and Erector: American Bridge Division. **THE AUDITORIUM**—Owner: Public Auditorium Authority of Pittsburgh and Allegheny County. Architect: Mitchell and Ritchey. Roof Designer and Consulting Engineer: Ammann & Whitney. Structural Fabricator and Erector: American Bridge Division. Roof Fabricator and Erector: Limbach Company.

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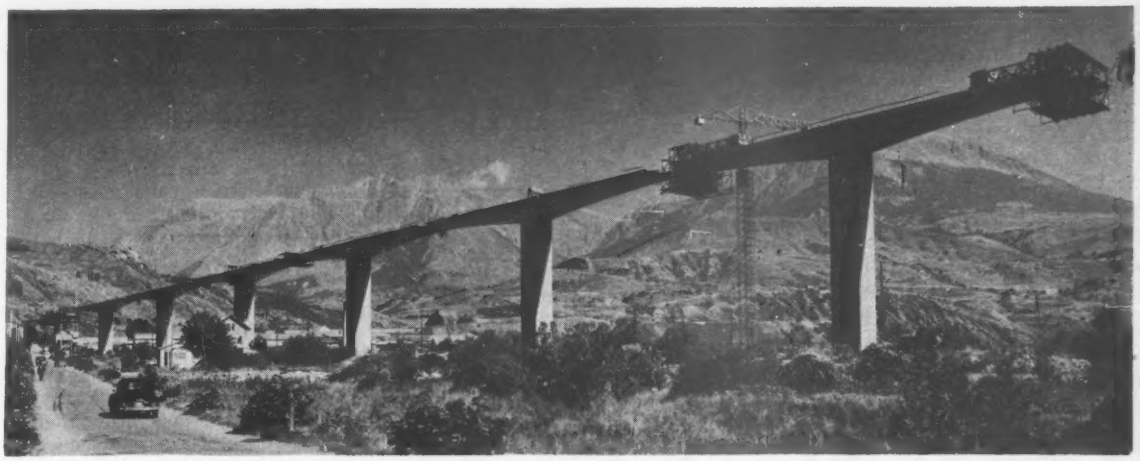
Mobile Cantilever Forms Used...



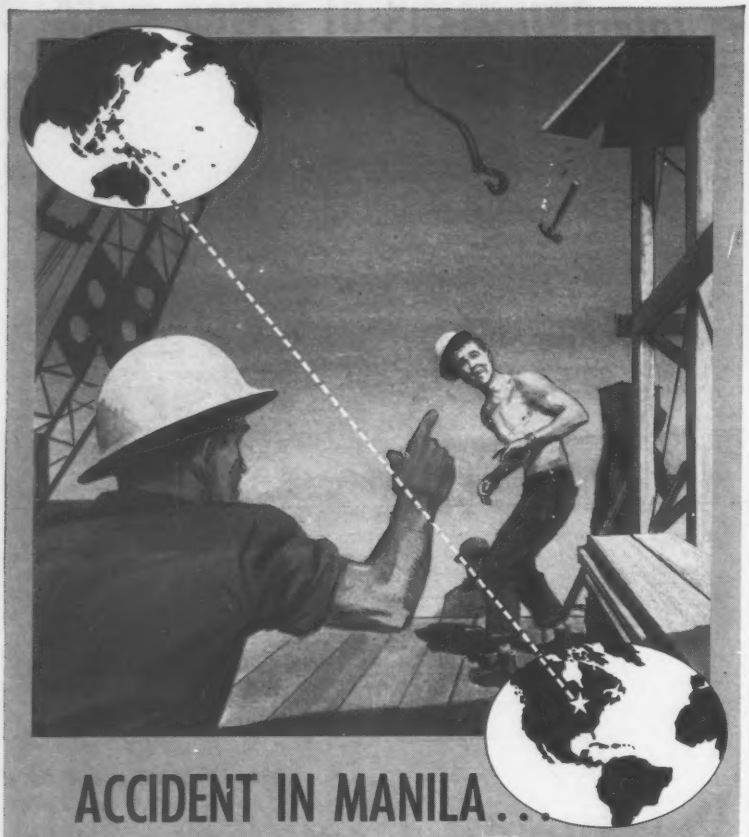
...On Long, High French Bridge

This month marks the completion of one of the world's most notable prestressed concrete bridges—the Savines Bridge. It's a cantilever girder type and crosses the Durance River Valley in southeastern France.

It has ten 253-ft spans, plus a half span at either end, for a total length of 2,783 ft. Its 30-ft-wide roadway is carried 160 ft above the valley floor on a single, hollow prestressed concrete girder 13 ft deep and 16.4 ft wide, supported by hollow prestressed concrete piers.

The bridge was built by the balanced cantilever method using mobile cantilever scaffolds to carry the girder forms. It is believed to be the longest and the highest bridge to be constructed by this relatively new procedure, which eliminates the need for any falsework.

The $1.5-million structure is part of an extensive highway relocation made necessary by a lake now beginning to



ACCIDENT IN MANILA . . .

But AFIA Prevents Financial Loss!

Two Americans and a native are hurt. All receive the best of medical care and are properly compensated with no financial loss to the Boston company which owns the plant.

For AFIA, here in the U.S.A., not only planned the insurance protection of the property, but also fitted Workman's Compensation to meet all requirements and conditions at home and in Manila.

That's AFIA's business . . . expertly protecting the property and liability of American firms operating overseas. To be sure your business interests abroad are soundly protected against loss, ask your agent or broker to review your present insurance schedule with AFIA.

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back up behind the nearly-finished earth dam at Serre Poncon, about 3½ miles downstream. At full reservoir level the bridge piers will be submerged.

Despite its substantial size, the Savines Bridge is made up of modest structural sections. Thus the bottom of the hollow girder sections is 1.48 ft thick at the piers and tapers down to only 0.6 ft at the center of each span. The sidewalls have a uniform thickness of 1.3 ft, while the top slab is only 0.6 ft thick. This slab, which cantilevers beyond the walls of the girder, also supports the asphalt road surface.

The tall, hollow piers have somewhat similar dimensions. They are 16.4 ft square, with walls 1.3 ft thick. The two tallest piers (141 ft) at either side of the river are founded on reinforced caissons sunk to rock. But the others, not subject to possible erosion from the river, merely rest on footings set in the alluvial floor of the valley.

Construction has taken just under a year—well ahead of schedule. This fast pace is largely attributable to the use of the mobile scaffolds that move the forms ahead as rapidly as concrete can be placed, cured and prestressed.

The scaffolds are steel frames that encircle the girders and include a tail section that extends back about 25 ft along the girder. This tail section is equipped with wheels that run on rails set on top of the girder. It also mounts a 33-ton counterweight at its rear end to balance the concrete in the forms.

Concrete was mixed at several points along the bridge alignment, and moved and raised to the forms by a rail-mounted tower crane. After each pier was built (with sliding forms) the part of the girder directly over it and extending 8.4 ft on either side was concreted and prestressed, using formwork attached to the pier. The mobile scaffolds were then attached to these cantilever ends, and the girders built out symmetrically in sections 11.6 ft long.

After each pair of balanced sections was concreted, cured and prestressed, the scaffolds were moved ahead, and the operation repeated until the girders were within 9.8 ft of their mates from adjoining piers. This closing section, when placed, included ball-and-socket type articulations to take care of load transfer and temperature movements between the cantilever arms.

To accomplish the progressive post-tensioning of the 11.6-ft girder sections—the key to this cantilevering method—the 72 prestressing cables (each of seven 7-wire strands) in the Savines Bridge are of various lengths. As each girder section was completed, eight cables were stopped off and anchored.

The cables were installed in ducts so

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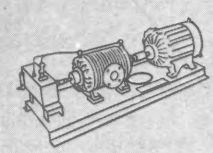
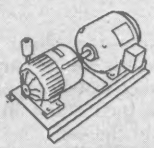
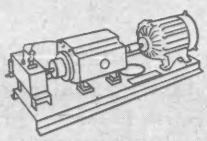


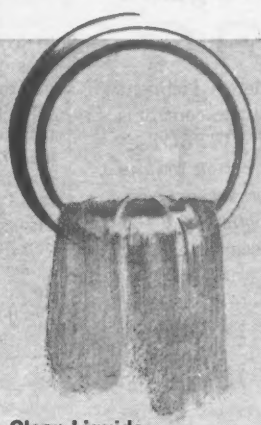
Air Cooled Units



Fan Cooled Units



Water Cooled Units



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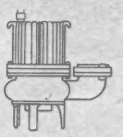

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Unique Designs

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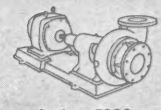
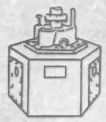


Series 6000

Shone® Ejectors



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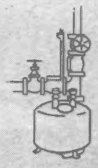
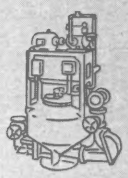


Expelsor®



Package Shone®

See the CAVITATOR® at booth 1156, Exposition of Chemical Industries, New York City, Nov. 30-Dec. 4

YEOMANS

Pumps and Waste Treatment Equipment

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Right now you may be puzzling over a particular waste handling job—which type of pump to use and whether pneumatic or electric; corrosion problems; reclaimable materials; precautions for hazardous wastes; and a dozen other considerations. **Handling wastes is tricky, takes a know-how all its own.**

For 61 years, Yeomans has been solving waste and drainage problems throughout industry. Once in a while, Yeomans engineers bump into a new twist, but usually the job is one-that has been worked out time and again.

Chances are, your own problem is already solved. Why not contact your Yeomans engineer-representative and find out. He brings you a wealth of experience, plus types of equipment unique in the field. If you don't already know him, look in Sweet's Catalog or in the yellow pages of the telephone book under "Pumps."

Their world is safer

with Fenwal DETECT-A-FIRE® units on guard

The unique ability to accurately detect incipient fire before it becomes large and difficult to control is a specifically engineered feature of DETECT-A-FIRE units. *This rate-compensation action assures positive protection no matter how fast or slow temperatures are building up to the kindling point!*

A DETECT-A-FIRE unit's heat-sensitive outer shell responds the instant it reaches a pre-set level of protection. *There's no delay for "heating through" . . . no unpredictable results inherent in fixed "rate-of-rise" devices!*

DETECT-A-FIRE units can be set for temperatures up to 725°F . . . require no resetting or replacements . . . can be widely spaced for economical installation. *They're rugged, trouble-free, reliable!*

DETECT-A-FIRE units are available in smart decorator colors to match modern interiors. Get full details on these advanced fire protection devices. Send for Bulletin MC-108. Write Fenwal Incorporated, 2811 Pleasant Street, Ashland, Mass.

At the first breath of danger, Fenwal DETECT-A-FIRE units go into action, provide complete protection in schools, commercial and industrial buildings.

ANOTHER EXAMPLE OF HOW Fenwal CONTROLS TEMPERATURE . . . PRECISELY

they could move under the post-tensioning load, which was applied by a double-action jack. The first step was to load and unload a cable up to 77 tons maximum to achieve an elastic deformation of the steel. Then the cable was stressed to 77 tons again, and relaxed down to 72 tons, the load at which anchorage was made. Any remaining lubricant was washed from the cable by pumping a detergent solution through the duct. Then grout was pumped in for permanent protection.

Average stress in the cable during the first part of the post-tensioning was 200,000 psi, for a final stress of 185,000 psi—about 80% of the ultimate stress of the steel. After shrinkage, creeping and elastic deformation, it is estimated that the stress will stabilize somewhere between 156,000 and 170,000 psi.

The Savines Bridge was designed by Society d'Etudes et d'Equipments d'Entreprises (SEEE). The contractor is Societe des Grands Travaux de Marseille. Both are Paris firms.

British Nuclear Group Will Produce Light Units

Two British firms are planning to collaborate in design and sale of small (17.5- to 30-megawatt) nuclear power station units. Humphreys & Glasgow, Ltd., and Babcock & Wilcox, Ltd., are the two firms.

The move into the "light" power unit field of nuclear energy emphasizes the limited market that European firms are finding for their wares at home. Primary object of the collaboration will be development of nuclear power systems suited for economical operation in areas such as India, Australia and South America.

Tema Finds Long Outfall Cheaper Than Treatment

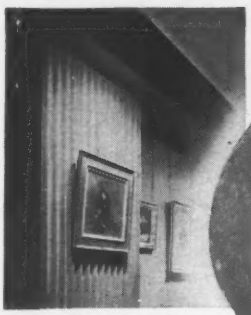
Tema Township, in the new African Republic of Ghana, has installed a mile-long 27-in. ocean outfall for raw sewage. The pipeline cost $3 million less than a sewage treatment plant, according to the city's consulting engineers, D. Balfour & Sons, of London.

The pipeline was assembled short, rolled down to the sea edge and winched out to sea by a barge anchored offshore. Pontoons fastened on either side of the string of pipe provided enough buoyancy to counter most of the weight, and the entire assembly rested lightly on the sea bottom during installation.

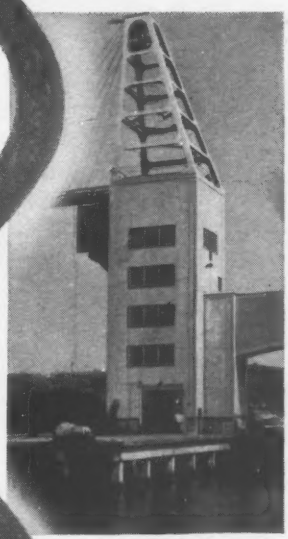
Taylor Woodrow (Ghana) Ltd. and Collins Construction Co. were the contractors.

FOR RUGGED SERVICE . . . FOR DECORATIVE APPEAL

CORRUGATED ASBESTOS TRANSITE®



Corrugated Transite adds a modern decorative, eye-catching touch.

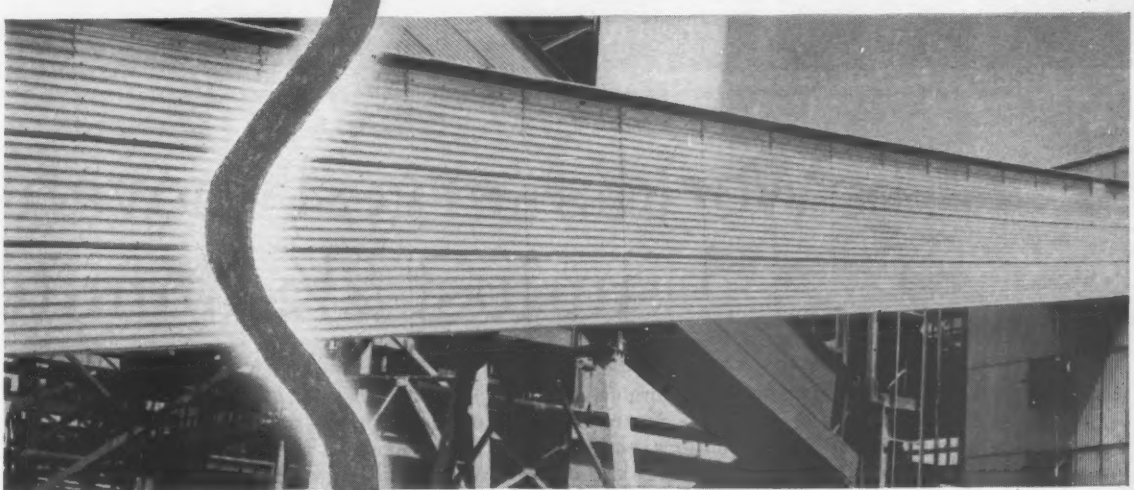


Corrugated Transite provides ages of service with virtually no maintenance.

Take asbestos; take cement. Form these virtually indestructible materials into carefully designed corrugated sheets, and you have Johns-Manville Corrugated Transite that wears like stone. It can't burn, can't rot, can't rust—and requires practically no maintenance.

Corrugated Transite is a neutral stone-gray color. It is attractive used alone or it harmonizes well with other materials. It is a structurally strong sheet for industrial construction or for commercial and institutional building. Also, it is often used decoratively for interiors.

Sheets of Corrugated Transite are 42" wide (10 corrugations) in lengths up to 12'— cover big areas quickly with minimum framing. For full information on this versatile material, send for the free 32-page brochure, "Corrugated Asbestos Transite." Write to Johns-Manville, Box 158, New York 16, N.Y. In Canada, Port Credit, Ont.



The big sheets of Corrugated Transite can be erected either horizontally or vertically.

JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

Owner—Public Auditorium Authority of Pittsburgh & Allegheny County Architect—Mitchell & Ritchey Cons. Engr.—Ammann & Whitney Elec. En

World's largest movable ro in just 2½ minutes ..

There'll soon be a new shape on Pittsburgh's skyline: the glistening dome of its new Civic Arena.

When completed in 1960, conventions, concerts, and opera can be scheduled under the stars without fear of the weather. It'll be possible to close the 1,350 ton movable roof in just 2½ minutes—even in 60-mile-per-hour winds! And up to 13,640 people will be able to watch indoor sports like basketball, boxing, and hockey in any season.

The drive systems for this revolutionary movable roof are all to be built by Westinghouse. Each of the six movable sections will be powered by five Westinghouse gearmotors, and Westinghouse control systems will handle the opening and closing of the entire roof.

This new Civic Arena will be a fitting addition to Pittsburgh, which is now celebrating its Bicentennial Year.

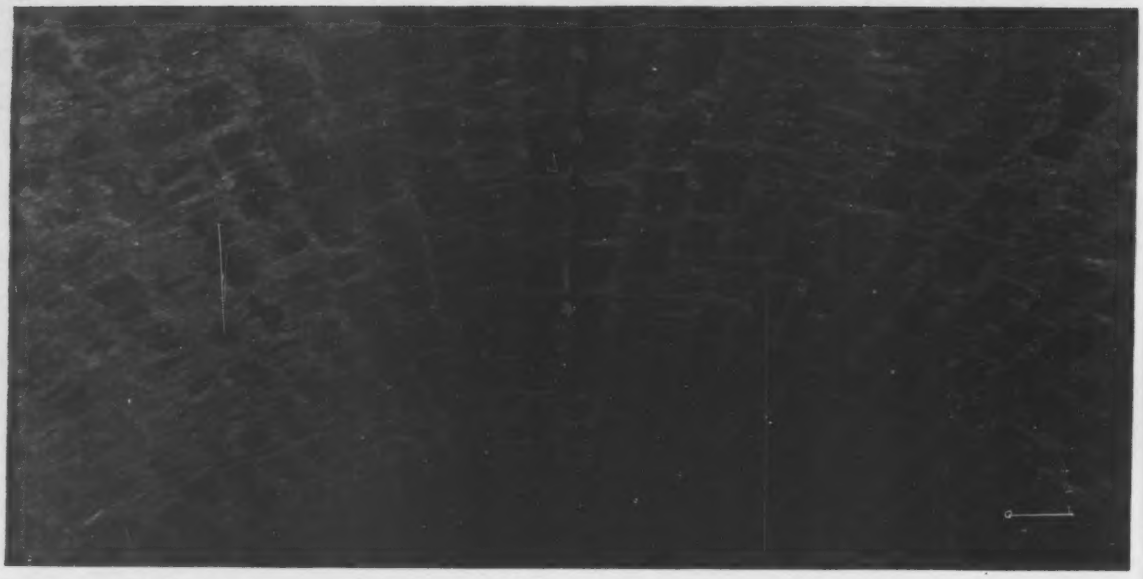
Covered in bad weather

Elec. Engr.—Carl J. Long and Associates Elec. Contr.—E. C. Ernst, Inc. Mech. Contr.—Heyl & Patterson, Inc.

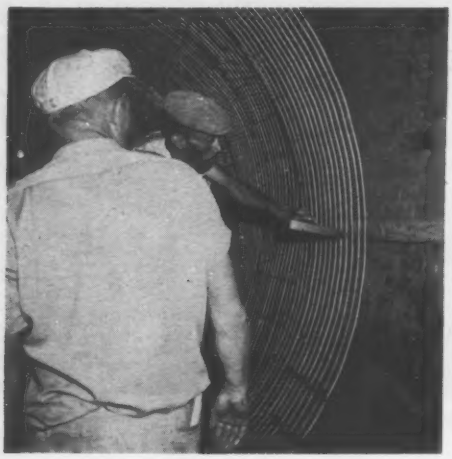
roof to be opened or closed . . . by Westinghouse

YOU CAN BE SURE...IF IT'S Westinghouse

WATCH WESTINGHOUSE LUCILLE BALL-DESI ARNAZ SHOWS CBS-TV FRIDAYS



1 When an old brick sewer failed, Atlanta decided to build a new concrete sewer inside.



4 Fastened to wood nailers . . .

5 And sprayed with six in. of concrete.

Salvaging a Broken-Down Sewer

A 40-ft cover of highway fill proved too much for an old 8-ft brick sewer in Atlanta designed to be buried only 15 ft below ground surface. A 60-ft section of the sewer roof collapsed.

While City Construction Chief Ray A. Nixon's engineers pondered the problem, Construction Department workmen rerouted sanitary flow around the break, cleaned up the rubble and installed corrugated metal pipe as a temporary storm drain through the wrecked section. Then the engineers inspected the line thoroughly and discovered about 600 ft to be weakened and dangerous from overload. Long deep cracks showed between brick courses at some sections. Along one stretch the cross-section shape had changed from near-circular to elliptical.

These areas were shored up with timbers to prevent further collapses while a permanent solution was planned.

M. B. Nixon, assistant construction chief, and R. W. Respess, engineer of sewers, first considered installing steel pipe inside the entire length of the damaged brick sewer as a permanent repair. But they gave up the idea when they found that pipe small enough to slip through the most irregular and flattened sections of the old sewer would reduce capacity too much. They decided instead to reline the old sewer with reinforced concrete—in effect, to build a new reinforced concrete sewer in place to fit the old brick sewer.

They specified two layers of steel reinforcing fabric about the same weight as that used in 7-ft standard precast reinforced concrete pipe. Circumferential wires 2 in. c-c are 4/0-gage in the inner layer, 3/0 in the outer layer. Longitudinal spacer wires are 5-gage, 7 in. c-c in both layers.

2 Steel fabric was lowered through manholes . . .

3 Coiled loosely and rolled to position . . .

6 Result: A new reinforced concrete sewer, only a foot smaller than the old one.

Wire was shipped to the job in 4-ft wide rolls cut into sections the length of the sewer circumference and 2 ft wide, and lowered by crane through manholes.

Workmen underground coiled the fabric, rolled it to the point of use and nailed it to furring strips fastened along the top, bottom and sides of the brick sewer.

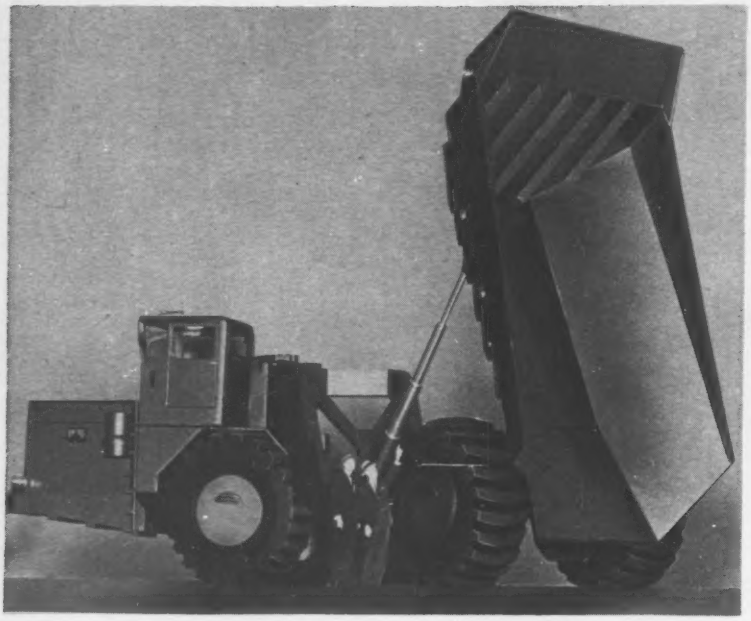
Concreting began after about 200 ft of sewer had been fitted with the outer cage of wire fabric. The mix was pumped underground through hoses from a truck-mounted mixer and compressor on the street.

The first 3-in. layer was sprayed on and allowed to set for two days. Then the inner reinforcing cage was placed and the remaining 3-in. layer of concrete sprayed on. The completed sewer has an effective diameter of about 7 ft.

It took two weeks to place all the steel. Six weeks was estimated for concreting, but heavy rains stretched it out somewhat. After a working routine was established, concrete was placed at about 8 cu ft per hr, and it took about a week to put two layers on each 100 ft.

The last step in restoring the old sewer was replacement of the temporary sections of corrugated pipe with precast reinforced concrete pipe.

The entire job cost Atlanta about $30,000. City forces did all work except concreting. That was done by the Western Waterproofing Co., of Atlanta.



Big Truck Has Electric Wheels

This 55-cu-yd dump truck now being manufactured by Unit Rig &. Equipment Co. uses a General Electric motorized wheel drive (ENR July 23, p. 49). A diesel driven generator, mounted in front of the operator's cab, provides the current for the four 380 rim hp motors within the wheel rims. Because of the electric drive, the big truck has no axles, transmissions differentials or drive shafts. The front wheels are bolted to a power steering mechanism, the rear wheels, to the chassis.

According to the manufacturer, the turning radius of the vehicle is only 50 ft.

The dumping cycle, said to be completed in 30 seconds, is handled by a pair of three-stage hydraulic pistons.

The first truck, now under construction, is scheduled for delivery in December.

It will be used on a Mesabi Range strip mining operation near Hibbing, Minn. UNIT RIG & EQUIPMENT Co., P. O. BOX 1889, TULSA 1, OKLA.

Trailer Takes 27-Yd Heaped Load

A 35-ton capacitv, bottom-dump trailer, designed and engineered for use with the Caterpillar DW21 tractor, will soon be put in production by Athey.

Capable of carrying a heaped pay load of 27 yd, this model PW21 trailer offers many new design and performance advantages, says the manufacturer. In addition to the two 3-ft-wide conventional bottom doors, it has a door at the rear.

This third door, together with steep side plate angles of 18 deg from vertical, and a 5-ft rear clearance, permits instant dumping, allowing the unit to ride out over the dump load. Constructed entirely of high strength steel, the trailer weighs 21,700 lb empty. It has a struck capacity of 23 cu yd.

Another feature is a hydraulically operated door mechanism that includes a hydraulic ram driving a cable take-up for closing the doors. After loading, the doors are locked, not merely closed. That relieves the hydraulic system and eliminates spillage during hauling. When dumping, the doors can be opened instantly or slowly for spread dumping.

The PW21-DW21 team, with a 345 hp engine, has a top speed of 27.9 mph. It will make non-stop turns in a 40 ft diameter circle. ATHEY PRODUCTS CORP., 5631 W. 65TH ST., CHICAGO 38, ILL.

Drafting Room File Has Honeycomb Interior

A filing unit for the drafting room consists of a heavy gauge square steel casing containing thirty-six, 2¼-in.-dia. sturdy file tubes. The tubes occupy the interior giving a honeycomb-like effect.

The square file may be placed horizontally or on end. It can serve as an independent unit or may be interlocked with similar units. Each unit has a complete index record of contents on the inside of the hinged door.

The Staktube Roll file is finished in hard-baked grey enamel. There is a choice of four different lengths to accommodate tubes 30 in., 36 in., 42 in., and 60 in. long. STACOR EQUIPMENT CO., 295 EMMET ST., NEWARK 5, N. J.

Crawler-Mounted Crane Has 125-Ton Capacity

The Model 4000 crawler-mounted lift crane is said to have the world's largest lifting capacity, 125 tons at a 17-ft radius.

The crane is designed to be placed on a standard railroad flat car for shipping without extensive preparations or dismantling. A self-removing counterweight helps reduce bulk and weight.

Optional features include independent boom hoist, independent swing, high capacity gantry, automatic and pantograph boom stops, equalizer and pendant type rigging, and manual or air controls. MANITOWOC ENGINEERING CORP., MANITOWOC, WIS.

Contractors Help Plan Utility Truck Bodies

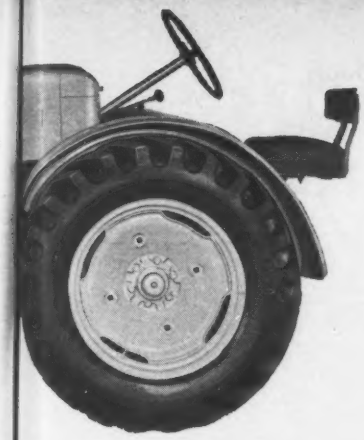
A line of utility truck bodies designed for the construction industry was developed in cooperation with some of the country's leading contracting companies.

Compartment capacity of the 18 models varies from 35 cu ft in half-ton trucks to 68 cu ft in one-ton bodies.

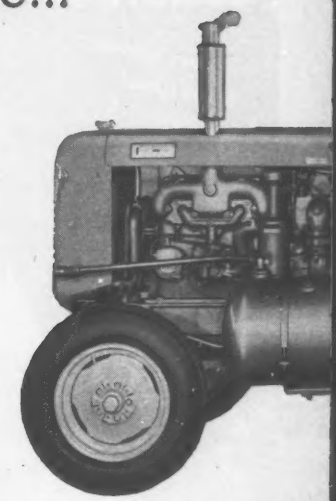
Removable shelf and tray dividers, similar to those in file drawers, plus removable shelves, permit each truck operator to vary his vehicle's interior compartment arrangement to fit daily job requirements. At the purchasers option, shelves can be welded permanently in place.

The truck bodies also include stainless steel hinge pins on all doors, double-paneled and weather tight doors, reinforced tailboards, and heavy safety-tread plate floors. READING BODY WORKS, INC., READING, PA.

(*New Products continued* p. 102)



from any angle...



It's a new, better Tractair!

Le Roi's self-propelled air-compressor has been redesigned to give you easier operation, easier serviceability

Le Roi's famous Tractair — the most popular self-propelled air compressor in the world — is now available in a new design! It's packed with convenience, features and maintenance-reducing innovations that will make Tractair an operator's dream — and a contractor's favorite.

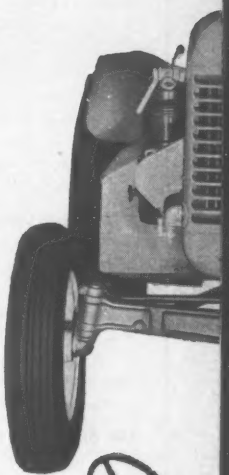
The 42-hp tractor delivers 125-cfm air power to widely scattered spots all over the job-site — over terrain where an ordinary compressor can't even be towed by truck! And when it gets there, you can park it on a hillside, in a ditch ... anywhere you want up close to the job, where short hose lines assure full power at the tool.

There's no dead time while this compressor waits to be towed — it moves itself!

And look at the new features: an upholstered seat with back rest — no more backache-creating bucket; power steering* to increase easy maneuverability; a completely removable hood to speed servicing and cut down on finger-cramping maintenance; completely enclosed battery where it won't check or weather; conveniently grouped, read-at-a-glance control panel; easily-reached, lockable tool box big enough to hold a couple of sinkers or breakers; 12-volt ignition system for fast starts in any weather — all in a modern design that matches serviceability with good looks!

See this newly improved unit at your Le Roi distributor — it can be your hardest-working, best utilized machine. Or write for more information to Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wisconsin.

*Optional



LE ROI TRACTAIR AIR COMPRESSORS

PORTABLE AND TRACTAIR® AIR COMPRESSORS
STATIONARY AIR COMPRESSORS
AIR TOOLS

T-901

JAY-PANS

America's Finest Forming Medium for

CONCRETE CONSTRUCTION

Saves money!
Saves labor!
Saves time!

ECONOMICAL! Although priced competitively with conventional forms, Jay-Pans give you more for your money! Always new . . . custom built . . . they eliminate drippage, and the vertical sides mean good savings in concrete, as well as a nice, smooth appearance.

LABOR-SAVING! Jay-Pans are tailored for any job, and when cutting is necessary, all that is required is a saw or pocket-knife. Sand is never placed under a Jay-Pan pour, and jobs stay on schedule because there are always enough Jay-Pans on the job site. Lightweight, easy to use, Jay-Pans end chipped floors, save both time and men!

WEATHER-RESISTANT! These are not regular "paper" pans. Jay-Pans are made of "freezurboard"—a patented, heavy-duty asphalt-impregnated material similar to asphalt roofing, which is saturated with asphalt. Millions of square feet of federal government, state, and private projects have proved the reliability of Jay-Pans under all weather conditions.

ALL SIZES! Tapered, adjustable, long-span, waffle, or cored slab, Jay-Pans give a clean job . . . come in all standard sizes as well as practically any other size you need to fit your most economical module.

For Full Free Information

WRITE WIRE PHONE

LAWRENCE PAPER COMPANY
Construction Products Division,
VIking 3-8111 Lawrence, Kansas,

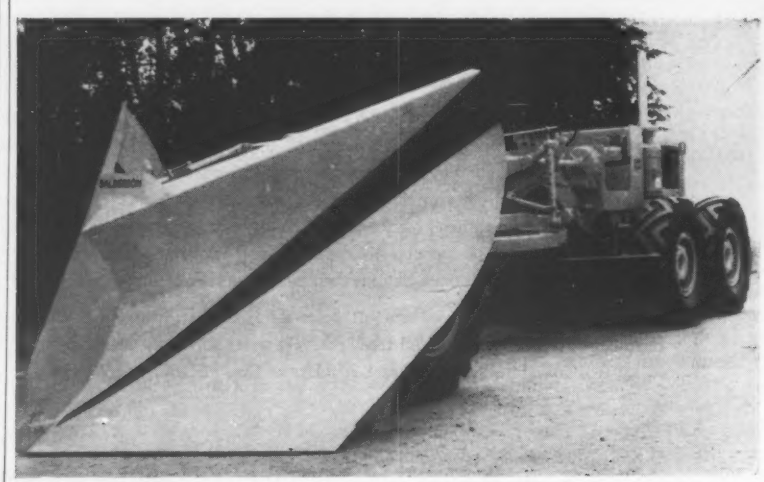
Land Clearer Fells and Chews

A "small" version of a land-clearing machine developed for the jungles of Africa has been made for use in the U. S. The 95,000-lb G-40 is said to knock down and chew up several acres of forest per hour.

Projected production costs rate the machine at $3.50 per acre cleared, which compares with $9 to $12 for the same job done with bulldozers, dynamite and other conventional methods, the manufacturer says.

The diesel-electric land clearer pushes trees to the ground with its front-mounted cutting edge and chews them up as it passes over with its blade-studded steel rollers.

The 400-hp machine is 37 ft long, 12 ft high; its two rollers are 12 ft wide and 5 ft in diameter. It is electrically powered and controlled and therefore easy to operate, the manufacturer says. R. G. LeTourneau, Inc., 2399 S. MacArthur, Longview, Tex.



Plow's Wings Make Snow Fly

Moldboards curved to a conical shape to lift and throw snow to the side are featured on the Model BV14 snow plow.

The BV14 can be used on the Cat No. 14 motor grader. Other features are replaceable shoes, nosepiece and cutting edges.

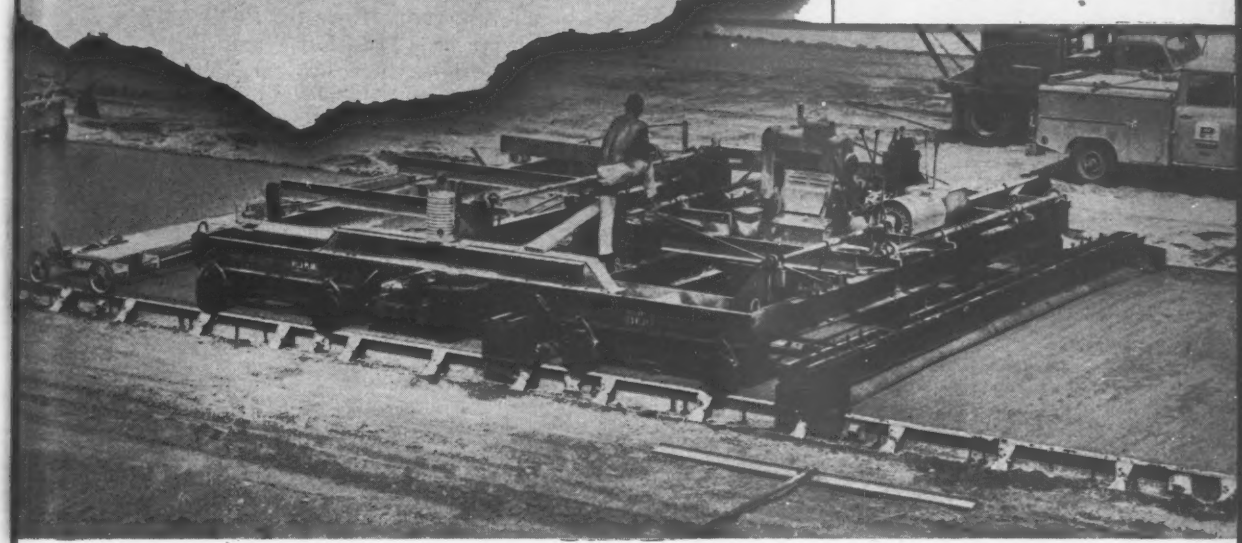
The plow attaches to the grader with self-aligning push arms connected to the king pin. The plow may be controlled by either scarifier or hydraulic controls.

The BV14 is 4 ft 3 in. high in front, 7 ft 8 in. high in the rear; cutting width is 10 ft 6 in.; weight about 2,880 lb with hydraulic controls, and about 2,730 lb with scarifier controls. Balderson Inc., Wamego, Kan.

(*New Products continued* p. 104)

PAVING RECORDS IN 14 MONTHS!*

using Heltzel Flex-plane Combination Finisher-float Machines



**Paving records established using the Flex-Plane "Combination"*

1. **SARGENT CONSTRUCTION CO.,** Saginaw, Michigan, July,'58. 5787′ of 9″ x 24′ slab in 12½ hours.
2. **DENTON CONSTRUCTION CO.,** Grosse Pointe Woods, Michigan, Aug. '58. 6029′ of 9″ x 24′ slab in 12½ hours.
3. **KOSS CONSTRUCTION CO.,** Des Moines, Iowa, June '59. 6067′ of 9″ x 24′ slab in 12½ hours.
4. **PIERSON CONSTRUCTION CO.,** Saginaw, Michigan, August, '59. 6244′ of 9″ x 24′ slab in 12 hours.

Canadian Record:

5. **HURON CONSTRUCTION CO.,** Chatham, Ontario, July, '59. 5290′ of 9″ x 12′ slab in 12 hours.

Michigan contractor finishes 6244 feet of 9″ x 24′ pavement in 12 hours...paves 5 miles in 5 consecutive working days!

The most recent of 5 paving records has been achieved by Pierson Contracting Company of Saginaw, Michigan. From Saturday, August 8th through Thursday, August 13th, they paved 26,526 feet of 9″ x 24′ pavement on U. S. 12 near Hartford, Michigan. Total hours worked—52.

On Tuesday, August 11th, 6244 feet were paved in 12 hours for the longest single day's run—and another new U. S. paving record.

Speed is not the final measure of a finishing machine's worth. But the ability to produce a finish that meets or exceeds State and Federal specifications, plus the capacity to do it faster and more economically, is important to every paving contractor. Several of these record-setting contractors have stated that their record runs would not have been possible without their "Combinations". Further proof that top-rated contractors depend on Flex-Plane top-rated finishing equipment.

If you haven't seen the record-breaking 1959 Flex-Plane Gas-Electric Combination Finisher-Float Machine, call your Flex-Plane Distributor today or write direct to:

(above) Pierson's record-setting "Combination" at work on U. S. 12, Hartford, Michigan.

(below) Huron Construction's '59 Model Gas-Electric "Combination" setting new Canadian record.

THE FLEXIBLE ROAD JOINT MACHINE CO. Warren, Ohio

Tracing Cloth or Drafting Film*?

Arkwright Makes Them Both

*Based on DuPont "MYLAR" polyester film.

BOB O'BRIEN
WHITEHORSE, CARSTAIRS AND O'BRIEN
BENDER, ILL.
ACTUAL SPECIFYING ENGINEER

On being asked where he would put Old Bearfoot's new distillery, O'Brien answered:

"On Arkwright . . . where else?" Bob who was known as Blob a few years ago before he found the perfect working surface had this to say about Arkwright, "I am a cloth man myself . . . and I know the value of good sharp, clear drawings. Frankly . . . I was hesitant about using film. But . . . when I learned that Arkwright was applying a coated surface for drafting film, I decided to try it. Well . . . I should not have been surprised at the result because Arkwright knows how to achieve that perfect working surface. And . . . that drafting film is ideal for making sharp, clean prints at fast printing speeds. Here's how . . . on Arkwright!"

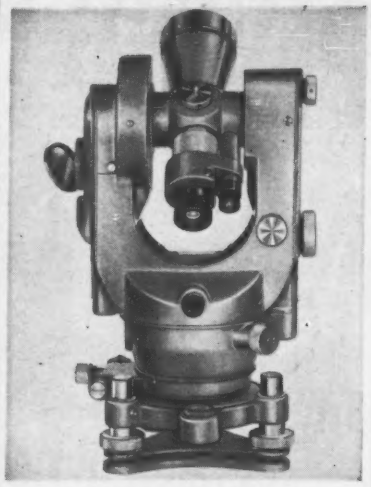
For perfect performance on cloth, specify the roll with the Blue Line — Arkwright. See for yourself the advantages of Arkwright's perfect coated surface on drafting film. Film available in several thicknesses. Both cloth and film in cut sheets or rolls. Write today for free samples.

Arkwright Finishing Co., Fiskeville, R. I.

It's precisely right on Arkwright!

ARKWRIGHT
FINISHING COMPANY

. . . *New Products*



Repeating Transit Adds Automatic Collimation

The Wild T-1A optical repeating transit adds automatic collimation to the features of the T-1.

The new unit has a rapid-reading microscope mounted next to the telescope, and an internal optical micrometer. The micrometer allows both circles to be read directly within 20 seconds and interpolated to 10 and 5 seconds.

An optical plummet is built into the alidade for easier operation, and there are upper and lower plate motions for repeating and zero-setting. The transit is intended for land, highway and heavy construction surveying—in daylight and underground. WILD HEERSBURG INSTRUMENTS, MAIN & COVERT STREETS, PORT WASHINGTON, N. Y.

Torque Converter Tractor Can Make 70,000-lb Pull

The TD-25—a diesel tractor that offers a drawbar pull of 70,000 lb in the torque converter model and 46,700 lb in a gear-drive version—is on the market.

Both models are powered by a six-cylinder, four-cycle, direct starting engine that develops 230 net hp at the flywheel at 1,500 rpm.

Four speeds forward and reverse are offered by the torque converter TD-25. Its operating weight is 46,000 lb. The gear-drive TD-25 has eight speeds forward and reverse and an operating weight of 45,500 lb.

The rear main frame of the TD-25 is a one-piece, all-steel weldment that is stress relieved and line-bored to keep shafts, bearings, working gears aligned.

With standard 24-in. track shoes, the crawler is 104 in. wide and 197 in. long and has a contact area of 5,652 sq in. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

NEED TO MOVE 3,000 YDS. PER SHIFT?

Whether your job is in construction or stripping as shown in this California operation, this big diesel Marion 111-M can make the dirt fly.

Here, its 3½ yard bucket on a 90-foot boom has chewed and moved 3,000 yards in an 8-hour shift.

Electric swing on this diesel-powered Marion, plus long wide crawlers that let it travel and work on any normal footing, make it ideal for many different types of work.

Ask your Marion Distributor for a 24-page catalog on this versatile, dependable machine.

You get

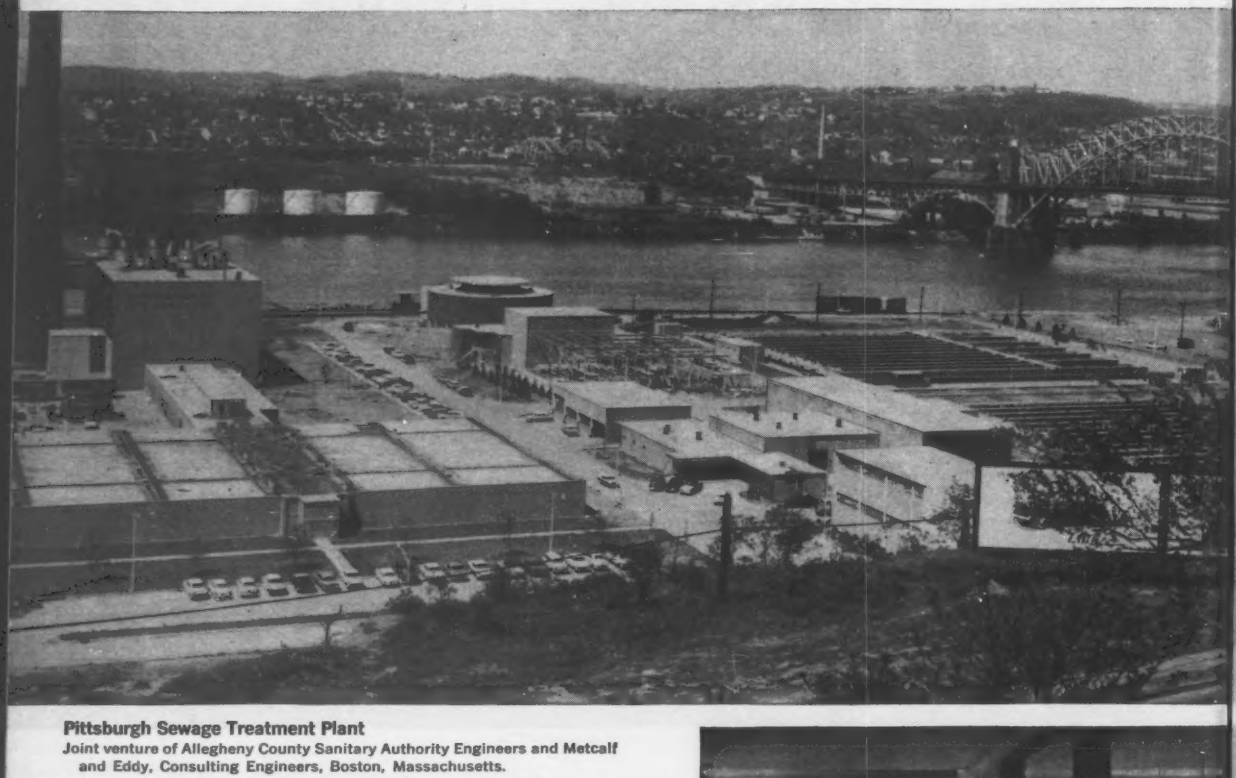
MORE *with* **MARION**

MARION POWER SHOVEL COMPANY • MARION, OHIO, U.S.A.

A Division of Universal Marion Corporation

For the entire city of Pittsburgh and 69 surrounding communities . . .

4-D Wrought Iron Pipe handles corrosive wastes in n



Pittsburgh Sewage Treatment Plant

Joint venture of Allegheny County Sanitary Authority Engineers and Metcalf and Eddy, Consulting Engineers, Boston, Massachusetts.

Installation: Wayne Crouse, Inc., Pittsburgh, Piping and Equipment
Sauer, Inc., Pittsburgh, Plumbing
Layne—New York Co., Inc., Pittsburgh, Downshafts

Architect: Celli-Flynn, McKeesport, Pennsylvania

Final welding on downshafts—Welders here complete transformation of ¾-inch 4-D Wrought Iron plates into 31-inch O.D. pipe. 4-D's self-fluxing action enables welders to easily produce sound, durable welds by any of the accepted welding methods. Elasticity of 4-D Wrought Iron prevents cracking during soil shifts or sudden jars in hauling.

Spray piping for sludge tank—Strung horizontally throughout nine sludge tanks are 270 lengths of 2-inch corrosion-resistant 4-D Wrought Iron Pipe. Spray nozzles, installed one foot apart, are tapped into each pipe run. Nozzles are set on 20-degree angles and aimed parallel to the sloped flush-down weirs.

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in new Pittsburgh Sewage Treatment Plant

The new $80 million intercepting sewer and sewage treatment project in the Greater Pittsburgh area is about ready for business.

Built by the Allegheny County Sanitary Authority, the modern system will minimize sewage problems for 69 communities in the Pittsburgh district. The plant will handle 150 million gallons of raw sewage each day. This in turn will greatly reduce pollution in many parts of the Allegheny, Monongahela and Ohio rivers.

4-D WROUGHT IRON IN ALL THESE SERVICES

Hundreds of tons of corrosion-resistant 4-D Wrought Iron are involved in the processing of raw sewage at the new plant. Piping in sludge concentration tanks, chimney vents, tank car connectors and vertical downshafts, as well as force main, effluent, liquid chlorine, compressed air, waste, vent and conduit lines are all 4-D Wrought Iron.

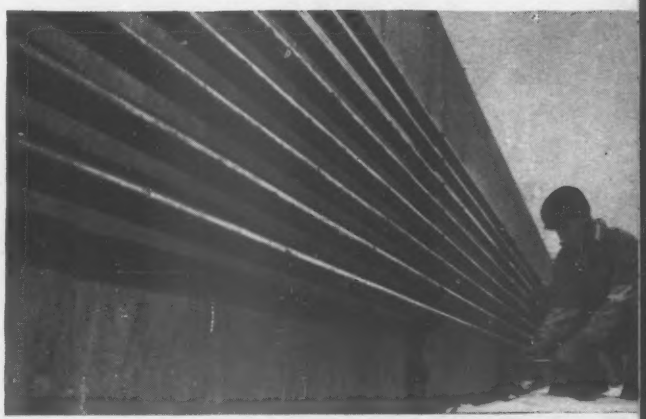
Diameter of the 4-D Wrought Iron Piping ranges from 1-inch to 36-inch O.D.

HERE'S WHY THEY USED 4-D WROUGHT IRON

Wrought Iron's record of trouble-free service in demanding applications is well established. 4-D does its own job. Rarely needs costly protective coatings and wrappings. Successfully resists shock and vibration. Inherent elasticity prevents cracking. Long random lengths are available. So, fewer joints are required. Fewer hangers are needed. And 4-D Wrought Iron Pipe does not rely on excessive wall thicknesses to ward off corrosion.

SUMMING UP

Low cost per year of service is the sum and substance of these 4-D virtues. 4-D Wrought Iron lasts. Write for our booklet on sewage treatment and disposal installation. A. M. Byers Co., Clark Bldg., Pittsburgh 22, Pa.



Aligning liquid chlorine lines—One-inch diameter extra-heavy 4-D Wrought Iron Pipe, leading to plant's chlorine room, receives proper alignment prior to final inspection. A service as corrosive as chlorine piping calls for the piping longevity of 4-D Wrought Iron.

Coffin for corrosion—This 25-inch diameter 4-D Wrought Iron downshaft (¾" wall) spells doom for aggressive elements contained in corrosive raw sewage. 4-D Wrought Iron's unique composition of glasslike iron silicate fibers entrained in pure base metal, blocks corrosion as soon as it starts.

BYERS 4-D WROUGHT IRON

TUBULAR AND FLAT ROLLED PRODUCTS

Corrosion costs you more than Wrought Iron

Give your equipment more air reserve for SAFER braking with

WAGNER ROTARY AIR COMPRESSORS

COOLER—Rotary operation cools air in compressor and dome before it is discharged into the line. This prevents carbon formation—reduces fire hazard—lets you use flexible connection in discharge line.

SMOOTHER—Rotary operation provides four impulses per revolution instead of two. These impulses are overlapping—result in smoother operation to increase belt life and coupler life.

QUIETER—Rotary operation eliminates valve noise. And the thousands of small overlapping air compression impulses per minute offer far less chance of synchronized vibration with the engine.

Get the full story in Catalog KU-201—write today!

WK50-12A

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AIR BRAKES • AIR HORNS • LOCKHEED BRAKE PARTS, FLUID, LINING & LINED SHOES
TACHOGRAPHS • ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES

Men and Jobs

International Engineers Elect Israeli President

Rahel Shalon has been elected president of the International Union of Testing and Research Laboratories for Materials and Structures. She is the first Israeli to be elected to head an international organization.

Professor Shalon, one of Israel's leading civil engineers, is chief of the building research station at the Technion-Israel Institute of Technology. She is the author of numerous papers on construction materials and a specialist on reinforced concrete.

Professor Shalon graduated from the Technion Institute in 1930. It is the only engineering university in Israel. During the war of independence in 1948, she served as a major in the Isreal army.

Rolf Eliassen To Head Atomic Disposal Research

Rolf Eliassen, professor of sanitary engineering at MIT, is setting up a research program on the disposal of radioactive wastes. The project is under the auspices of the International Atomic Energy Agency with headquarters in Vienna.

Mr. Eliassen will be responsible for planning research and placing contracts in foreign countries to review and study solutions to disposal problems. He is an authority on stream and air pollution. The program will extend over a number of years and will involve many of the 72 member nations of the International Atomic Energy Agency.

Mr. Eliassen will also participate in an international conference on radioactive wastes disposal in Monaco.

Reclamation Bureau Moves Five From Basin Project

Five members of the Bureau of Reclamation have been transferred from the Columbia Basin project at Ephrata, Wash. The new assignments are part of an effort to put the project in "mothballs" as it approaches its present statutory limit on expenditures.

H. R. Gray, assistant irrigation supervisor, has been moved to the Bureau's Minideka, Idaho, project as assistant superintendent. J. D. Humes, former chief of design and construction at Ephrata, succeeds Mr. Gray.

Arthur Swanson has been reassigned to the Bureau's Boise office after serving as irrigation manager for the Franklin field branch of the Columbia Basin project.

Allen B. Colwell has been shifted from the lateral and farm layout section of the design and construction division at Ephrata to succeed Mr. Swanson.

Thoralf Torkelson has been appointed regional land officer in Boise. He had been assistant project development supervisor in Ephrata.

Careers

Business

Richard Lawrence is vice president in charge of construction with Major Plumbing and Heating Co., Detroit. He joined the company in 1950 as apprentice plumber and more recently has been project superintendent.

John E. Marqusee and **L. William Kay II** have been elected president and vice president respectively of Northern Properties, Inc., Hartsdale, N. Y. The company plans and constructs residential and commercial sites. Both men are partners in the Kay Co. and the Kaymarland Group, Hartsdale.

Alfred K. Allen takes over as vice president of Folmar & Flinn Industries, Inc., Montgomery, Ala. Mr. Allen has been vice president in charge of construction with Utah Construction Co., San Francisco where he worked on the St. Lawrence Seaway.

David M. Checkley is president of Vitro Engineering Co., New York City, a division of Vitro Corp. of America. From 1944 to 1954 he was with J. Gordon Turnbull, Inc., Cleveland consulting engineer firm. There he directed the planning of 20 air force bases in England and Japan and three in Alaska. In 1954 he established the industrial engineering division of Arthur G. McKee Co., Cleveland.

(*Men and Jobs continued p. 110*)

READY FOR YOU NOW
SYLGAB'S NEW CATALOG

The Latest in the Concrete Fireproofing and Construction Field

This is your most reliable guide to "the right materials at the right time".

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SAVE TIME TWICE

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BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
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HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES

Floors designed for safety *first!* and everlasting beauty

ALUNDUM NON-SLIP TERRAZZO

In specifying Norton ALUNDUM Terrazzo for floors and entrance ways to the new First Western Bank and Trust Company Building, Oakland, Cal., the architects not only provided *walking safety* for the bank's customers but brought a subtle touch of lasting beauty to its modern interior design.

For floors and stairways in all types of buildings, both public and commercial, Norton ALUNDUM Aggregate in the proper proportions furnishes a terrazzo surface which is non-slip wet or dry, retains its initial beauty indefinitely and is exceptionally resistant to wear.

Send for brand new catalog on Norton products for WALKING SAFETY. Ask for Form 1935EN

Architects:
Stone, Marraccini & Patterson
San Francisco

Terrazzo by:
P. Grassi - American Terrazzo Company
San Francisco

NORTON COMPANY
WORCESTER 6, MASS.

NORTON
NON-SLIP FLOORS

ALUNDUM AGGREGATE for Terrazzo and Cement • ALUNDUM STAIR and FLOOR TILE
ALUNDUM and CRYSTOLON Non-slip Abrasives

. . . Men and Jobs

Walter R. Shaw has been appointed project engineer for Western-Knapp Engineering Co., San Francisco. He will handle design, layout and process engineering on chemical and ore processing plants. Before joining the firm Mr. Shaw was resident manager of a seawater magnesia and basic refractory material plant for H. K. Porter Co., Inc.

Morris Backer is now an associate in H. E. Bovay, Jr. consulting engineers, Houston. He joined the firm in 1952 and has recently been group leader in the mechanical design section.

James M. Bower assumes duties as head sanitary engineer for Patchen, Mingledorff and Williams, consulting engineers, Augusta, Ga. He comes to the company from the Virginia Military Institute, where he was assistant professor of civil engineering. He was also a partner in Bower, Dobyns & Morgan, engineers, Lexington, Va.

Charles Spivey has been named planning director for Koch, Fowler & Grafe, Inc., consulting engineers, Dallas. He has been planning director for Lubbock, Tex.

Ira L. Carpenter is manager of industrial construction for the Edward Gray Corp., Chicago. He will also supervise the coke oven business and coal handling problems. He comes from the Wilputte Coke Oven Division of Allied Chemical and Dye Corp. where he was field superintendent.

Warren C. Hargreaves is safety director of Fruin-Colnon Contracting Co., Indianapolis. He has been serving as safety director with the York division of Borg-Warner Corp.

Associations

Harvey C. Hayes, authority on submarine detection, and **Floyd R. Watson,** noted for his work in architectural acoustics, have been honored by the Acoustical Society of America. Mr. Hayes, who directed naval research on problems of underwater sound, has received the Pioneers of Underwater Acoustics Award. A graduate of Harvard University, Mr. Hayes has taught at Harvard University and Swarthmore College. From 1923 to 1947 he was superintendent of the Sound Division of the Naval Research Laboratory.

Professor Watson was awarded the Wallace Clement Sabine Award. He studied physics at the University of California at Berkeley and received his PhD from Cornell University. In 1902 he joined the faculty of the University of Illinois, became a full professor in 1917 and retired in 1940. He has been a consultant on the acoustics for the National Gallery of Art in Washington, Purdue Music Hall, and the Pentagon.

(*Men and Jobs continued p.* 114)

For reliable performance in prestressed concrete use Bethlehem Stress-Relieved Strand

- *Meets ASTM A416*
- *Uniform mechanical properties*
- *Clean surface for tight bond*

Bethlehem stress-relieved strand delivers top performance in prestressed concrete because its manufacture and heat treatment are precisely controlled. The result is a strand which amply meets the exacting requirements of ASTM specification A416-57T.

Bethlehem's continuous, in-line operation maintains stress-relieving temperature within an extremely small range, providing a strand having constant and predictable mechanical properties—both within the same reel, and from reel to reel.

With Bethlehem stress-relieved strand there is no need for frequent cleaning of end diaphragms and strand grips due to clogging by foreign metal. Thus "down-time" is minimized.

The 7-wire strand, made in continuous lengths, has good flexibility and is easy to handle. And Bethlehem strand saves time on the job because crossovers during unreeling are held to a minimum.

Feel free to talk over your requirements with a Bethlehem engineer. To start the ball rolling, get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

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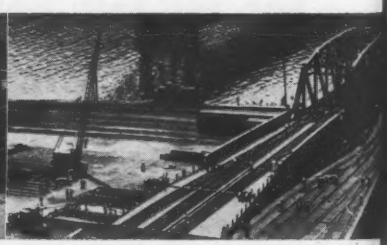
ONE CALL TO FOSTER

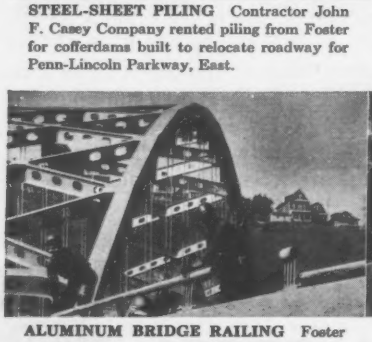
for steel-sheet piling, bearing pile, pipe, rail

STEEL-SHEET PILING Contractor John F. Casey Company rented piling from Foster for cofferdams built to relocate roadway for Penn-Lincoln Parkway, East.

PIPE PILES Foster light gage spiralweld pipe formed cast-in-place piles for Pittsburgh's Crosstown Boulevard. George Vang, Inc. drove piles for contractor Sanctis Construction, Inc.

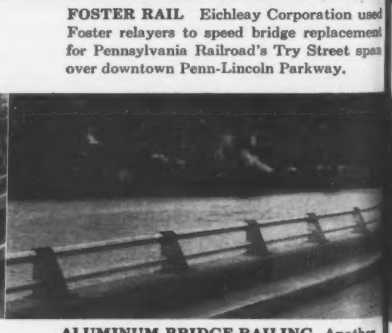


FOSTER RAIL Eichleay Corporation used Foster relayers to speed bridge replacement for Pennsylvania Railroad's Try Street span over downtown Penn-Lincoln Parkway.



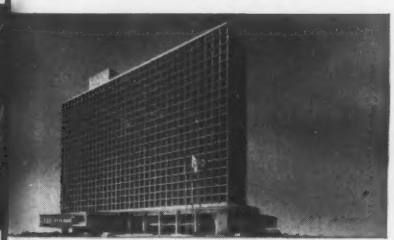
ALUMINUM BRIDGE RAILING Foster prefabricated parapet railing was easily installed by American Bridge Company on the Fort Pitt Bridge connecting Parkway West.

STEEL-SHEET PILING Foster supplied all the piling needed for construction of Mellon Park's underground parking garage. The H. K. Ferguson Company, contractor.



ALUMINUM BRIDGE RAILING Another parapet railing installation on the Penn-Lincoln Parkway East, supplied by Foster for contractor Booth and Flinn Company.

rail moved these Pittsburgh jobs ON TIME, ON COST



STEEL PIPE Foster delivered all the black and galvanized pipe for plumbing, heating and air conditioning The Pittsburgh Hilton. Contractors Limbach Company and Sauer, Inc.

STEEL-SHEET PILING Foster rental piling driven through Smithfield Street Bridge approach for Parkway underpass construction. John F. Casey Company, contractor.

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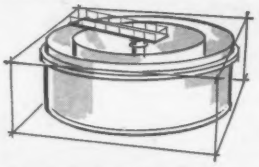
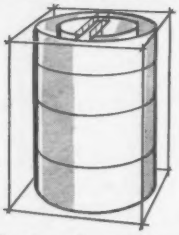


"PACKAGED UNITS" SOLVE PLANT WATER TREATMENT AND SEWAGE PROBLEMS



The trend to dispersal of industrial plants and the location of new factories in previously undeveloped areas often involves problems of water treatment and sewage disposal. Even when plants have been long established, the same problems may arise as existing facilities become inadequate or conditions change in the surrounding area.

A ready solution is found in the new "packaged" treatment units now available from Dorr-Oliver. Essentially, these offer all the advantages of conventional, large scale systems in a compact, easily installed form suitable for individual plant installations. Basic equipment for each unit is all designed into a single tank. This "unitized" approach not only produces simple, easily maintained units, but also results in relatively low cost.

The Dorrco PeriFilter System, for example, combines a pre-treatment mechanism and a rapid sand filter to provide a continuous supply of purified water. Depending on the pre-treatment method used, the unit will remove hardness, turbidity, color and/or iron and manganese. Operation can be manual, semi-automatic or fully automatic.

The Dorr-Oliver CompleTreator is a complete sewage treatment unit, operating on the modern Biofiltration principle. In a single welded steel tank, it combines processes that normally would require five tanks. It is so compact that it can be shipped complete by rail or truck, yet has a treatment capacity for 150 population equivalent. Where greater capacity is required, two or more units can be readily installed, or consideration may be given to other Dorr-Oliver equipment.

The development of treatment plants for water, sewage and industrial wastes has long been a Dorr-Oliver specialty. If you'd like to learn more about such equipment, with particular application to your own special problems, just drop a line to Dorr-Oliver Incorporated, Stamford, Connecticut.

Dorr-Oliver offers a wide range of equipment, methods and complete systems for the processing industries. Examples include:

WATER AND WASTE TREATMENT • ROASTING • DRYING • CLASSIFICATION
THICKENING • SCREENING • FILTRATION • CLARIFICATION • WASHING
AGITATION • CENTRIFUGATION • ION EXCHANGE • PUMPING

. . . Men and Jobs

William W. Stevens has been elected president of the Mahoning Valley Society of Professional Engineers.

Walter F. Pflumm is second vice-president of the Purchasing Agents Association, Louisville. He is also purchasing agent for the Girdler Construction Division of Chemetron Corp., Louisville.

William M. Sangster, is the newly elected president of the Mid-Missouri Section of the American Society of Civil Engineers. Mr. Sangster is professor of civil engineering at the University of Missouri.

John N. Richards has been elected president of the American Institute of Architects for the second successive term. He is a senior partner in Bellman, Gillett & Richards, Toledo architects and engineers. A native of Warren, Ohio, Mr. Richards studied architecture at the University of Pennsylvania where he was awarded the Cret Medal in 1928 for excellence in architectural design and the Stewardson Traveling Scholarship in 1930.

Education

Anthony F. Gaudy, Jr. has been appointed assistant professor of sanitary engineering at the University of Illinois. He has been working for the Bureau of Public Health on the biological treatment of petrochemical wastes. Professor Gaudy graduated from MIT in 1951 and returned there for his master of science degree. From 1955 to 1957 he worked for the National Council for Stream Improvement as a research engineer and as regional engineer for the west coast district. He entered the University of Illinois in 1957 to work toward his PhD, which he received this year.

Public Works

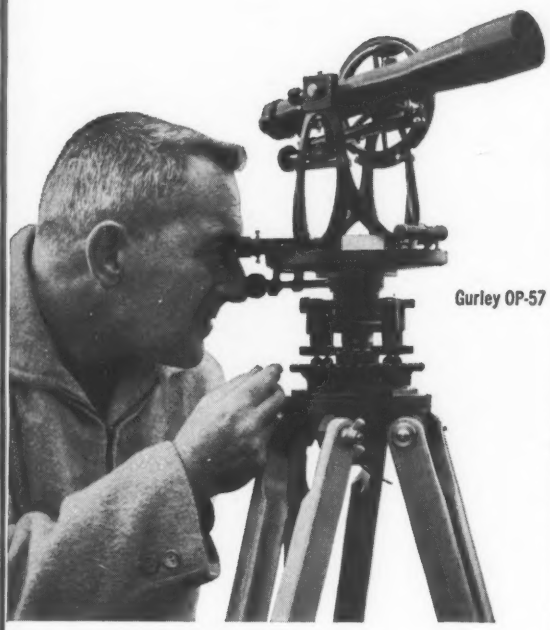
Ray E. Holmes heads the planning branch of the Seattle district of the Corps of Engineers. He had been with the Portland district for 17 years where he was chief of rivers and harbors.

John P. Willison, Columbus, Ohio, expressway coordinator, has been appointed slum clearance and rehabilitation director for the city.

Michael A. Groen, sanitary engineer, is plant supervisor of the Bromley treatment plant, Kenton-Campbell Counties, Ky. He formerly served for 25 years as superintendent of sewage treatment at Dearborn, Mich.

Capt. Hubert R. Chaffee, U. S. Coast Guard, has been named chief of engineering for the Coast Guard Headquarters, Cleveland. He will be responsible for the design and maintenance of construction on shore stations and floating units in the Great Lakes area.

Built-in optical plummets eliminate plumb bobs save set-up time...improve accuracy



Gurley OP-57

Gurley OP-137

The Gurley Optical Plummet Transit (Model OP-57) has proved itself to be such an important time and money saver in the field that this optical plummet feature has also been added to the Model 132 Standard Precise Transit. The new transit will be known as the OP-137.

Both these Optical Plummet Transits will save you time and trouble in setting over a point. The OP-57 and OP-137 eliminate the swing and sway of the cord and plummet—exasperating and time consuming. You will especially appreciate the increased accuracy on windy locations.

By rotating the instrument 180°, you can be assured of positive centering.

The Gurley Optical Plummet Transits are furnished with tripods which have built-in shifting heads. They allow a two-inch shift of instrument over the point, providing greater latitude in initial set-up.

Model OP-57 is recommended for very exacting work; the OP-137 for general engineering and construction work because of its shorter telescope, smaller size and its lighter weight.

Now in *two* models Gurley offers you an important advantage of the optical-reading theodolite *plus* the simplicity, ruggedness and proved performance of the American transit. *Write for new Bulletin OP-100.*

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Please send new bulletin OP-100 with details on Gurley's Optical Plummet Transits.

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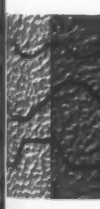

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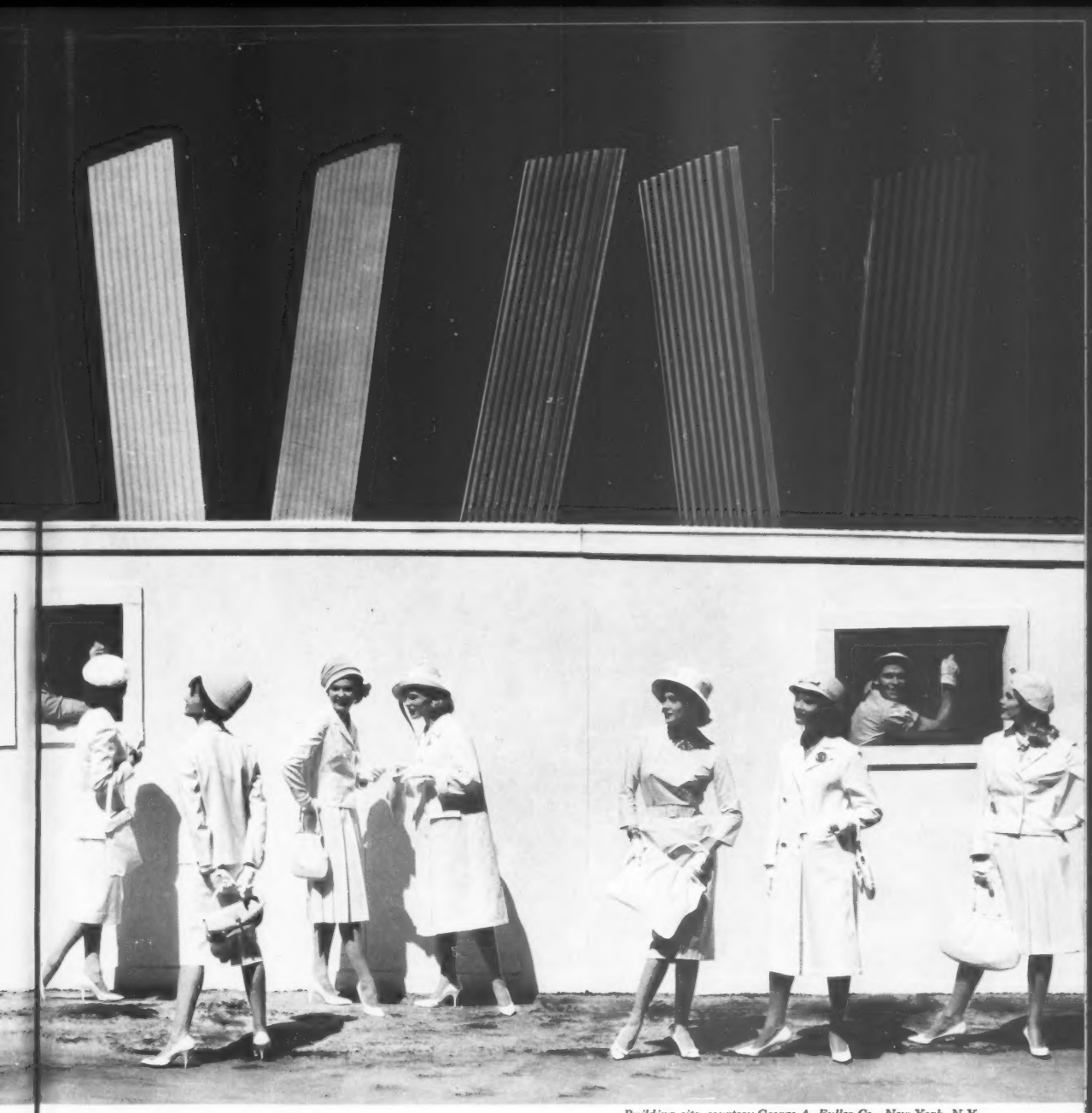
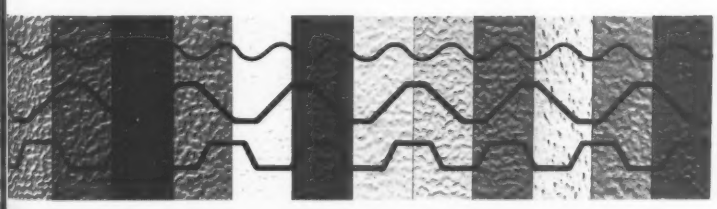


Building site, courtesy George A. Fuller Co., New York, N.Y.

and leave your client smiling



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Obituaries

Marc Leggiero Dies; ENR Associate Editor

Marc Leggiero, an associate editor on the staff of ENGINEERING NEWS-RECORD, died suddenly Nov. 8 at the age of 33.

Mr. Leggiero was a Columbia College graduate who had been on ENR's editorial staff for nearly seven years.

His editorial work in both the water resources and transportation areas for the magazine had made him an authority on federal legislation pertaining to the highway program as well as federal grants-in-aid to municipalities for sewage works.

Before assuming his first writing assignment on ENR in 1956, he was a layout and production editor. He had done make-up work on American Legion magazine before joining ENR in 1953.

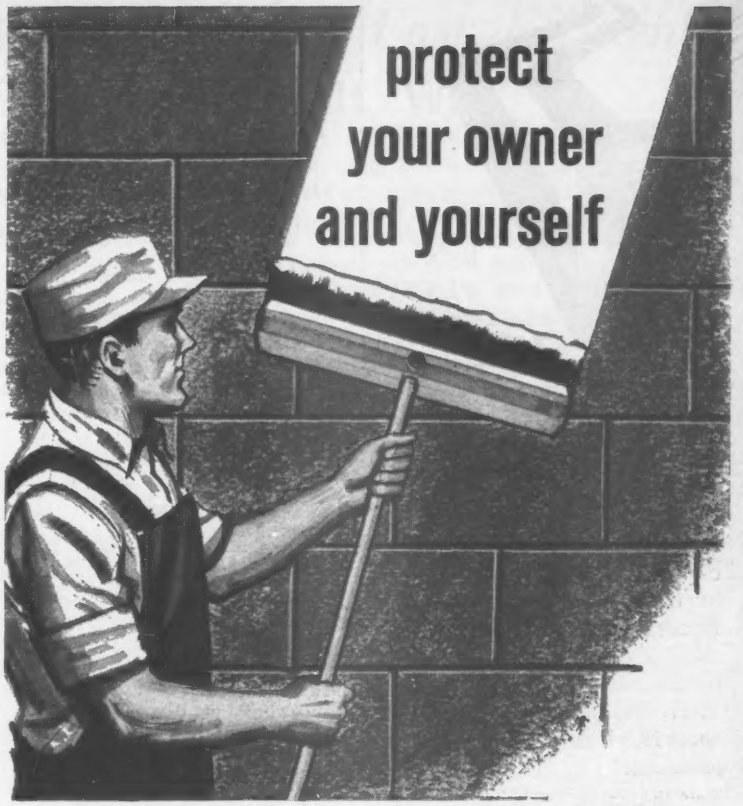
Walter C. Sadler, 68, professor emeritus of civil engineering at the University of Michigan. He joined the faculty in 1925 as an assistant professor, was promoted to associate professor in 1933 and to full professor in 1941. A graduate of the University of Illinois, Professor Sadler also held a master of science degree from MIT and a bachelor of laws degree from the University of Michigan. He was the author of five textbooks and a frequent contributor to technical journals.

Otto L. Wiesenborn, 67, retired Army engineer. He served with the Corps for 25 years.

George A. Bass, 95, retired president and board chairman of the Hydraulic-Press Brick Co., St. Louis. He joined the firm in 1895 as part of the Washington, D.C., branch sales staff, rising in rank until 1909 when he was elected president. He became chairman of the board in 1948 and two years later retired. Mr. Bass was also former president of the American Face Brick Association and was active in founding the Structural Clay Products Institute.

William A. Wright, lawyer and former member of the Virginia State Highway Commission. He was a member of the Virginia House of Delegates and served as State Conservation Commissioner.

Daniel R. Lucchesi, 38, structural engineer for the Portland Cement Association, Baltimore. A native of Baltimore, Mr. Lucchesi graduated from Loyola College and received a bachelor of science degree in engineering from Johns Hopkins University.



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THERE MUST BE A REASON!

The **total** mileage of concrete pavements on our state highway systems has almost steadily **decreased** since their peak year of 1942. Tabulations published by the U. S. Bureau of Public Roads indicate a total of 95,740 miles of concrete in 1942 which has dwindled to 75,873 miles in 1957, **despite the construction of about 19,849 miles of new concrete pavement!***

For the same years, high type bituminous (Asphalt) mileage **increased** from **61,249** miles in 1942 to **214,469** miles in 1957.*

It is reasonable to assume that such factors as engineers' decisions, public opinion, economy, serviceability, adaptation, etc., played major roles in this emphatic trend.

Modern asphalt pavements are being given preference under varying conditions of topography, climate, traffic and other affecting items throughout our 50 states.

It is difficult for anyone to discount this amazing trend in preference.

FIGURES SPEAK LOUDER THAN WORDS!

**Latest available U. S. Bureau of Public Roads Statistics.*

Presented in the Public Interest by

THE ASPHALT INSTITUTE

A Contract Binds and Benefits

One who accepts the benefits of a contract cannot escape liability for his obligations under that contract.

A party to a contract may not accept the benefits of that contract and later avoid his obligations through a technicality. Where one party breaches a contract and the injured party does not object to the breach, the injured party cannot later void the contract.

The "injured party" in this case was the City of Detroit, which bought two electric transformers from Standard Transformer Co. The sales contract provided ". . . prices are subject to adjustment as follows: The billing price will be that in effect at time of shipment, any increase being limited to 10%."

Delivery date, set in the contract, was December 15, 1951. This was later changed to August 10, 1952. The contract also allowed an extension of time in the case of "unavoidable delays." But in such cases the contractor was required to notify the city within 48 hours after delays occurred.

The transformers were delivered August 17, 1953, over a year late, and didn't go into operation until the spring of 1955. The contractor contended two events delayed his delivery: failure of the city to furnish specifications on time and intervention of the Korean War. The city claimed neither event prevented delivery on time.

Prior to delivery, the contractor did not notify the city of the cause of delays, as required by the contract, nor did the city complain of delayed delivery or of the failure to give notice of delays.

In May, 1953, prices of transformers increased 7.75%. Standard wrote to the city, informing it that the delivery price would be increased accordingly. The city did not answer the letter. It accepted delivery in August, but raised no objection to the increased bill. Later the city refused to pay the increase, Standard sued and recovered.[1]

Evidence at the trial showed that the city did not use the transformers until considerable time after delivery and so did not suffer any damages from delayed delivery. The court ruled that the city was liable for the increased cost, since it made no complaint about it.

The court stated: "One cannot sit back and watch the other party breach a contract and then, while accepting the fruits of that breached contract, cunningly and with malice aforethought, aim at rescission if and when it suits its convenience or pocketbook to do so. Accepting the 'goods' under such circumstances calls for payment of the 'price.' And . . . conduct of both parties really legally extended the time for performance . . . which included liability to the City for any increase in the price of these transformers."

The court cited two reasons for its opinion: When the City was informed of the price increase, and the increased bill, it did not object; and the City accepted delivery, and accompanying invoices showing the increase, without objection. "In my opinion," said the court, "defendant's refusal to pay and denial of liability months after it accepted delivery at which time of delivery it was in possession of all necessary facts, came much too late."

(1) Standard Transformer Co. v. City of Detroit, 146 F. Supp. 740.

Engineer Isn't Paid When Plans Aren't Used

A federal court has warned that an engineer should see that his contract provides some compensation even if his plans are not used.

In this case, an engineer was hired for $4,000 to prepare a report including cost estimates and recommendations for a central air conditioning system in a hotel. An additional fee for plans and specifications was guaranteed in the contract, if they were used. If not, the contract provided that no payment would be made.

The engineer was paid $4,000 for his report. But the hotel considered the central air conditioning plan too expensive, and instead installed room air conditioners. The engineer sued to recover payment for his plans.

The court dismissed the suit on the grounds that his plans were not used. Under the contract's terms, the engineer was not entitled to a fee in such a case, the court held. It is up to the engineer to make certain he will be paid a fee even if his plans are not used, said the court.

(1) De Laureal & Moses v. Pensacola Hotel Co., 168 F. Supp. 684, U. S. District Court, Dec. 23, 1958.

(*Legal continued p.* 124)

CLEAN WINDOWS *the Fast, Efficient*
CLEVELAND TRAMRAIL WAY

MODERN buildings not only have more and larger windows than ever before, but because of air-conditioning, they are often non-opening. This necessitates providing some means for reaching them when washing the outsides, and sometimes for the insides also.

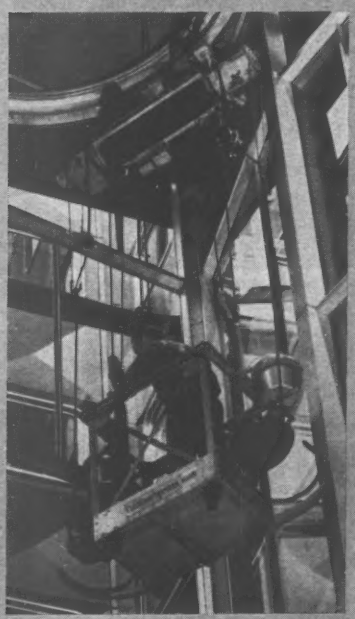
Even where provision is made for reaching the outside of a window from the inside, this usually is not desirable when a building is air-conditioned. Open windows quickly unbalance an air-conditioning system, in warm weather and, of course, are undesirable in cold weather.

Cleveland Tramrail Window Washing Equipment offers a solution to the problem. It enables a man to reach every window quickly and wash them with complete safety. In addition, it facilitates other outside building maintenance such as pointing up, painting, minor repairs. The equipment is available for hand or electric operation.

Write us for free illustrated booklet No. 2022 giving details.

CLEVELAND TRAMRAIL
Overhead Materials Handling Equipment

This modern glass-walled office lobby in the super-modern office building of Aluminum Company of America in downtown Pittsburgh is 4½ stories high. Cleveland Tramrail track circles the lobby both outside and inside. A motor-driven carrier and electric hoist is provided for each track loop. When a cage is attached to a carrier, a window washer can position himself at any part of a window by operating the simple hoist and travel controls.



Washing windows on the inside of the lobby. The same cage is used both outside and inside.

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NEW CAT DW20 4-wheel, 345 HP Series G Tractor with 24 cu. yd. No. 482 Scraper

NEW CAT DW21 2-wheel, 345 HP Series G Tractor with 19.5 cu. yd. No. 470 Scraper

NEW CAT No. 619 2-wheel, 225 HP Series B Tractor with 14 cu. yd. No. 442 Scraper

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BIG NEW CAT WHEEL RIGS CUT PRODUCTION COSTS

You name the job...these new Cat Wheel Tractors and matching LOWBOWL Scrapers can do it better with faster cycles and greater production, at lower cost. For example:

DW20-DW21 Series G Tractors and matching LOWBOWL Scrapers Now these big wheel tractors develop 345 HP—an increase of 8% over former units. Both tractors have 12% more rimpull than before—the DW20 develops 39,565 lb. (maximum) rimpull, and the DW21 has 49,100 lb. (maximum) rimpull. As a result, the new rigs travel faster (up to 20%) under similar haul road conditions. To accommodate this greater power and capacity, improvements have also been made in transmission and final drive.

Matching the increased horsepower and productivity of the Series G Wheel Tractors are the new No. 456 and No. 470 Series B LOWBOWL Scrapers. Rating is increased 8% to 19.5 cu. yd. struck and 27 cu. yd. heaped. (Rating on the No. 482 is 24 cu. yd. struck and 34 cu. yd. heaped.) Bowl, draft frame and apron are strengthened for greater resistance to tough materials and rugged loading—withstand higher loading stresses.

No. 619 Series B Wheel Tractor and No. 442 Series B LOWBOWL Scraper Here is the latest addition to the Caterpillar line of high-speed earthmoving equipment. This brand-new earthmover is a 14 cu. yd. struck (18 cu. yd. heaped) unit featuring ground-hugging roadability, "years ahead" service-accessibility, and high productivity. The No. 619 has a turbocharged 225 HP engine (and high torque rise), planetary final drives, unit construction, tubeless tires, a swing-away dash, 2-jack steering, and a dry-type air cleaner, providing the design and performance features that insure superior workability on a broad range of applications. All this in the new No. 619-No. 442 unit—plus proved economy over any earthmover of comparable size.

DW15 Series F Wheel Tractor and No. 428 LOWBOWL Scraper Greater strength and productivity in the well-known four-wheel DW15-No. 428. Bevel gear and pinion, differential and front wheel spindles offer increased service life. Machine delivers 200 HP. The big LOWBOWL Scraper handles 13 cu. yd. struck, 18 cu. yd. heaped. Can be unhitched to haul other units.

Plan your work around these new Cat Wheel Rigs for top production at lowest cost: The DW20-DW21 Series G, the new No. 619 and the DW15 Series F. The complete facts are at your Caterpillar Dealer. Call him today for a demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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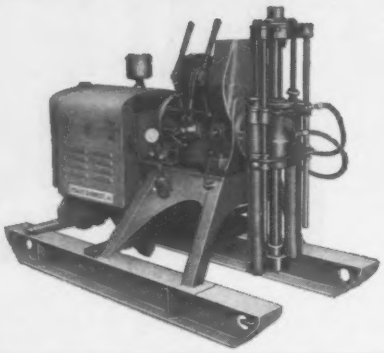

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- ADAPTABILITY — The choice of . . . power units, screwfeed or hydraulic swivelheads in varying spindle sizes, four transmission speeds and the availability of a side-mounted cathead and a built-in retracting mechanism makes the 40-CL adaptable to most drilling jobs.
- MOBILITY — The 40-CL has a built-in set of sheaves to facilitate movement under its own power. In addition a low-bed trailer is available that permits the use of the rig directly from the trailer mounting in locations where the terrain permits.
- QUALITY — Careful machining and time-tested inspection methods substantially increase the trouble-free drill life.

If you want a machine for truck mounting, ask about our 40-C TRUCK-MOUNT. When you want an "all-round" core drill machine, remember that the 40-C and 40-CL Core Drills are just the machines for you.

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Owner's Liability

Owner liable for builder's neglect on risky work.

An owner may be held liable for negligence by his contractor if the work is inherently dangerous, and under certain other conditions.

The question of owner's liability came up in New Jersey when a building owner sued a city parking authority. His claim arose when a wall, being demolished for the parking authority by an independent contractor, collapsed on the roof of the plaintiff's building, which adjoined the work site.

The trial court dismissed the suit on the ground that the city was not liable for damage caused by the negligence of an independent contractor. The appellate court ordered a new trial because of a question as to whether the work was inherently dangerous; if it was, the city would be liable.

The appellate court said that an owner is ordinarily not liable for negligence of an independent contractor he hires. However, the court cited three instances where the owner is liable:

- Where the landowner retains control of the work methods.
- Where he engages an incompetent contractor.
- Where the work itself is a nuisance (inherently dangerous).

In the latter case, said the court, the landowner should recognize the creation of a risk of harm to others if the contractor is negligent in taking special precautions. The court defined work as "inherently dangerous" if it requires special precautions to avoid injury. This means more than simply danger arising from casual or collateral negligence, it said.

(1) Majestic Realty Associates, Inc. v. Toti Contracting Co., 153 A. 2d 321, Supreme Court of New Jersey, July 6, 1959.

One Party Can't Impede Performance by Another

Federal court rules that in every construction contract there is an implied covenant that one party to the contract will not hinder performance by the other party.

The hindered party was a contractor who, under government contract, agreed to clear the reservoir for a dam under construction. During construction, the general contractor closed a cofferdam to divert water from the work area with less than 24 hours notice to the clearing subcontractor. The effect was to raise the river level by amounts rang-

Steel pipe was first choice at Travelers Insurance Company after performance/cost actuarial tables showed the facts

Evaluated on the basis of performance, service life, original cost, installation cost—calculation showed that *steel pipe* could best serve the new Travelers Life Insurance building in Boston for vent and drainage lines, the fire protection sprinkler system and stand-pipe fire lines.

The cost of *steel pipe* when related to the performance advantages was truly significant. And, the savings in initial cost and installation cost were considerable. But these facts are true in most *steel pipe* applications . . . for *steel pipe* is the least expensive and most versatile of all tubular products.

These are the reasons why *steel pipe* is the most widely used pipe in the world for fire sprinkler systems, water transmission lines, vent and drainage lines, structural applications, radiant heating, snow melting, refrigeration, ice making, gas, and air lines, and for electrical conduit.

Simple equipment and tools make steel pipe easy to install anywhere.

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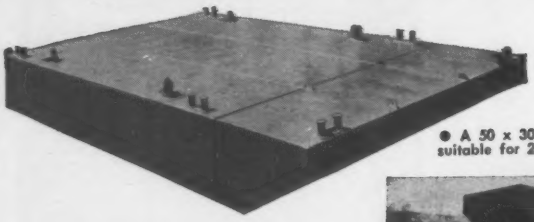
SECTIONAL BARGES



● A 50 x 30 foot four-section barge suitable for 2 yard dragline or clam.

★Designed specifically for the contractor who has need for transporting his floating equipment in a short time with the least effort and expense. By quickly and easily bolting together any number of sections, the contractor has an extremely adaptable piece of equipment to provide an economical solution to any floating problem. Dragline, trench hoe or clamshell dredging, pile driving, crane lifting, pumping, pipe laying or floating equipment are some of the many uses of the versatile Manitowoc Sectional Barge.

Write for additional information and prices. Sold direct or through Manitowoc Engineering Corporation distributors.

● Easily transported by rail or highway.

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Dealers in principal cities, affiliates around the world.

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ing from 20 ft at the dam site to one ft at the upstream end of the reservoir, 11 miles away.

The flooding of the reservoir area increased the work of the clearing sub. Work was slowed, more men were required and special equipment had to be rented and purchased. The subcontractor sued the government to recover his increased costs.

In awarding him a judgment,[1] the court stated: "The inconsiderate conduct was a breach of that term which every contract contains, by fair implication, that one party to a contract will not impede . . . the other party."

(1) Volentine and Littleton v. United States, 169 F. Supp. 263, U.S. Court of Claims, Jan. 14, 1959.

Bids May Vary Slightly From Specifications

If a bid contains some variations from the specifications, the variations do not necessarily prevent the awarding of a contract.

Test used by some courts is whether the variations are substantial. If substantial enough to give the bidder an advantage over other bidders, then the variation is fatal, according to some courts. Here are some examples:

A bid that varies materially from the requirements of the specifications is justification for rejecting the bid. "But not every variation from the specifications will destroy the competitive character of the bid. To have that effect the variation must be substantial. To be substantial it must affect the amount of the bid. It must give the bidder an advantage or benefit not allowed the other bidders. It must be an element considered in fixing the price.[1]

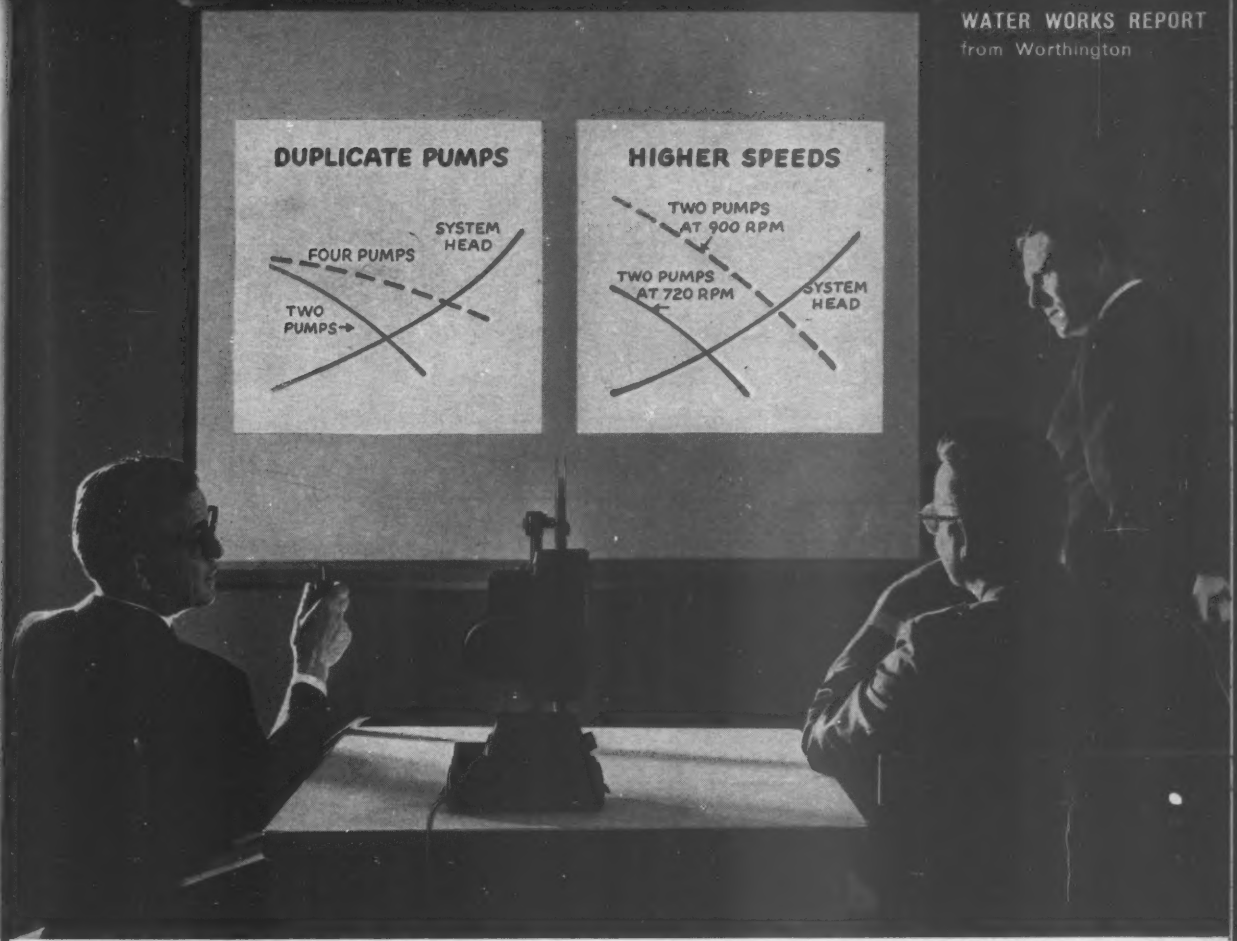
"Any variation from specifications will destroy the competitive character of the bid if such variation is substantial. To be substantial, it must affect the amount of the bid; it must give the bidder an advantage or benefit not allowed other bidders; it must be an element considered in fixing the price."[2]

A variation from the specifications in an advertisement for bids for public works does not destroy the competitive character of the bid unless it affects the amount of the bid by giving the bidder an advantage or benefit not enjoyed by other bidders.[3]

(1) National Engineering & Contracting Co. v. City of Cleveland, 146 N.E. 2d 340, 345.
(2) Lasky v. City of Bad Axe, 89 N.W. 2d 522, 352 Mich. 272.
(3) Pascoe v. Barlum, 247 Mich. 343, 65 A.L.R. 833.

(Legal continued p. 130)

WATER WORKS REPORT
from Worthington



Two ways of taking care of future demands for increased capacity are shown here. The chart on the left indicates the performance of 4 pumps operating in parallel. The chart on the right indicates the same conditions obtained with the use of 2 pumps operating at higher speeds.

DUPLICATE PUMPS OR HIGHER SPEEDS?

A discussion of the economics of multi-speed pumps for water works

Today, most engineers plan for expansion by providing space for duplicate pumps, or pumps that will operate in parallel giving increased capacity as water demand increases.

Another way of taking care of increased capacity is through the use of higher speeds. By providing for multi-speed operation in the future, it may be possible to save thousands of dollars. Spare parts, as well as maintenance costs, can also be reduced.

The charts above show how this can be done. Suppose your water works now uses two 60 hp centrifugal pumps. Sometime in the future you plan to increase capacity by one-third by adding two more pumps which will operate in parallel. The total cost of the four pumps and motors installed would be approximately $26,000.

This same increase in capacity, in some instances, can be accomplished by multi-speed pumping. If you initially made the proper provisions, you could later increase the speed of the two pumps from 720 rpm to 900 rpm. This would give you the necessary capacity increase of 33⅓%. And the total cost would be only $21,000, a saving of $5,000 or approximately 20%.*

It's not necessary to limit your thinking to two-speed operation. Possibly the most economic proposal for your system would be three or four-speed operation. All public water-supply systems are different and pumping equipment is affected by different capacities, suction conditions, and static and friction heads. Therefore, all factors must be known before deciding on the proper approach. This sort of planning, however, combined with the use of multi-speed pumping when appropriate, can save you large amounts of money.

Ask your consulting engineer about the merits of multi-speed pumping. He'll explain to you its many advantages. And for unbiased equipment recommendations, get in touch with Worthington. Worthington makes all types of pumps and drives and a complete line of engines, compressors, and auxiliary equipment.

For a reprint of an engineering discussion of multi-speed pumping for water works, write to Worthington Corp., Section 105-4, Harrison, N. J. In Canada: Worthington (Canada) Ltd., Brantford, Ont.

*Cost figures are estimated and conservative. No cost has been added for additional space required by the extra pumps.

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first solid state engineering computer in the low-price field

Here is a new and powerful stored program, desk-size computer designed to bring more computing ability to engineering problems at low cost.

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Easy to learn—easy to operate—easy to communicate with —this powerful computer relieves engineers from routine calculations—frees them for creative tasks.

Data is fed into the 20,000-digit magnetic core memory of the 1620 via punched paper tape. Alpha-numeric output is printed at the console typewriter in desired format, under stored program control.

This new computer with its two-address instruction format and variable field length, gives you up to 50% more storage capacity than a fixed word-length system.

All notations of input and output are in the decimal system. An unlimited decimal field and internal self-checking assure accuracy. A powerful two-address instruction format adds to the 1620's timesaving capabilities.

Programming is simplified through the use of IBM Fortran —a mathematical programming system which compiles machine instructions from algebraic and English language notation. A library of programs for standard engineering computations will also be part of the 1620 package.

Call your IBM representative—ask him to show you all the unique features of the IBM 1620. Like all IBM data processing equipment, this system may be purchased or leased.

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Balanced Data Processing combines systems and services inseparably to produce performance in the best tradition of more than 45 years of IBM experience. It means more production per data processing dollar for you.

This compact Jaeger Model 2PN, pumps all the water a 2" suction hose can handle. **With 2½" suction hose it pumps more than 14,000 gph.**

Now handle more water with Jaeger pumps

Today's Jaeger Sure Prime pumps deliver performance never before offered—and at slower, long-life operating speeds. For example, a Jaeger 6PH can handle 100,000 gph as a dewatering pump or deliver 975 gpm at 60 psi pressure for well point jetting or gravel washing. Base your pump buying on latest information. See your Jaeger distributor or send for catalog.

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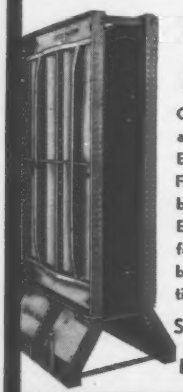

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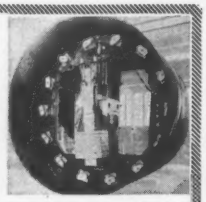

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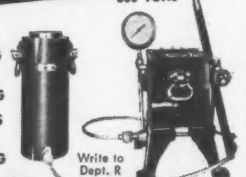

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Equipment Rental Legal Even Though Work Wasn't

A Kentucky court rules that state law does not require the state highway department to rent construction equipment by competitive bidding.

This case arose when Kentucky's Attorney General Jo M. Ferguson tried to recover equipment rentals paid to Richard Hall, a contractor and trucker in Hindman, Ky. The equipment was used by the highway department for construction work on 13 rural secondary roads in Knott County.

Mr. Ferguson contended that the state is required by law to advertise for competitive bids on such road construction. If no satisfactory bids are received, the highway may use its own forces for the work. Because no competitive bids were solicited in this case, the attorney-general contended the subsequent contracts with Mr. Hall were void.

The trial court upheld this reasoning, but the Kentucky Court of Appeals reversed the decision.[1] The appellate court ruled Mr. Hall may keep the rent he has received and that the state must pay the remainder owed to him. The court held that there is no statute requiring the department to advertise for bids or to award contracts by competitive bid for the rental of equipment.

It stated: "The fact that no bids were solicited for construction of the roads in question before the State proceeded to perform the work by 'force account,' even if such was required, should not invalidate the equipment-rental contracts let to the Hall companies . . ."

(1) State of Kentucky v. Richard Hall, Kentucky Court of Appeals, September, 1959.

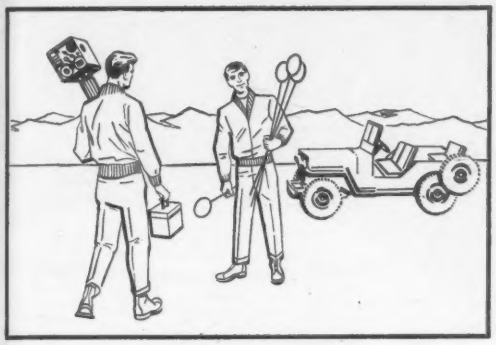
Owner's Breach Gives Contractor Three Remedies

In a recent Maryland case[1] the court set forth three remedies available to a contractor when the owner breaches his contract.

• **Assuming full performance**—If he had fully performed the contract, the contractor's profit would be the amount of the contract price minus the cost of construction. To accord him this profit in the case of a breach by the owner the court may award the full amount of the contract price minus the cost of completing the work.

• **Partial performance**—The court may award the contractor a) his actual expenditure to the date of breach plus b) a profit he can prove with reasonable certainty that he would have made had he finished the job minus c) the value of the materials on hand that are to be removed. "If correctly

MEASURE DISTANCES WITH ELECTRONIC SPEED AND ACCURACY



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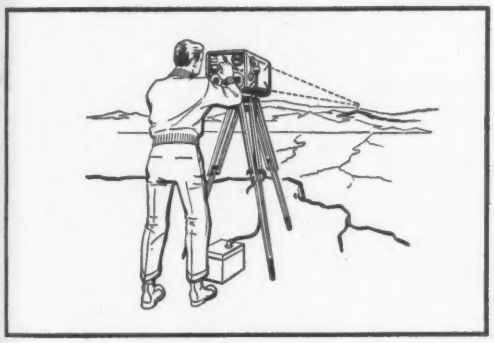
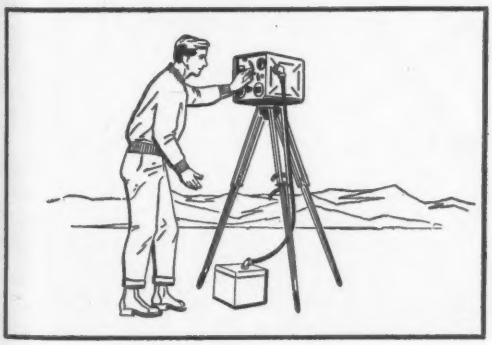


RAPID SET-UP



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Only 12-inches square and weighing 35-pounds, the instrument with power supply and all associated equipment is easily carried, located and moved about the surveying project.

Not only is the Model 4 smaller, lighter and more compact than Geodimeter Models 2 and 3, but its accuracy and time-saving characteristics are unequalled within ranges of 50-feet to 3-miles. It is fully capable for use as a first order instrument.

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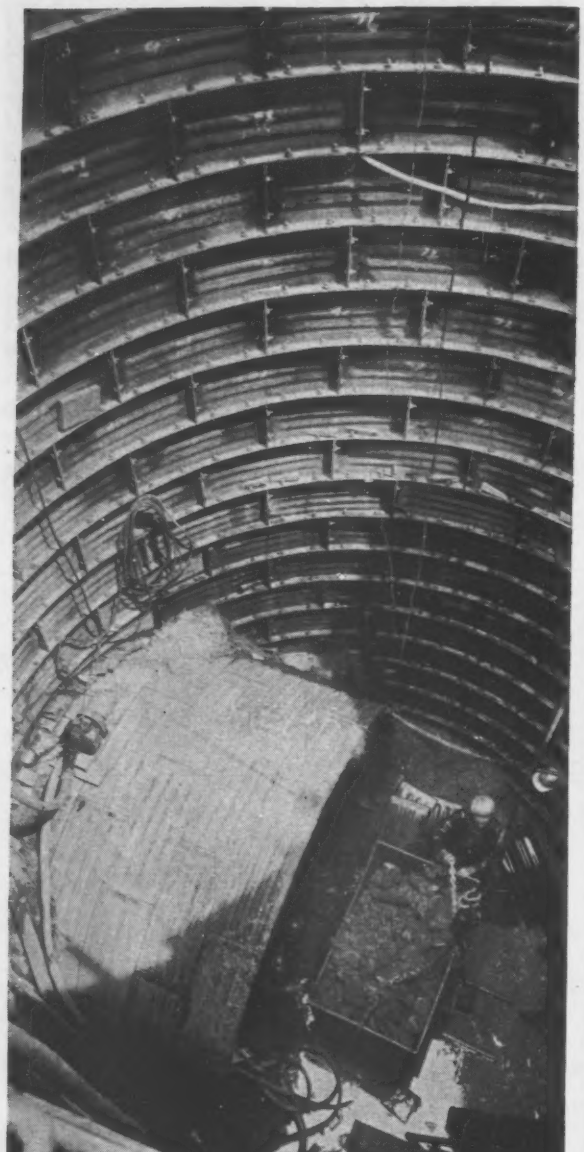
New Construction Idea News

Faster, safer tunneling and how it's b



COMPLETED IN 3 WORKING DAYS—352 COMMERCIAL tunnel liner plates reinforce 192" diameter, 30 feet deep, initial access shaft for Tousley Construction Co. section of the sewer project. As vertical shaft bored downward, the 16" x 37½" tunnel liner plates were successively secured in position with ¾" bolts.

UNCLUTTERED WORKING AREA at Thompson Construction Co. access shaft permits easy entry into tunnels and allows fast removal of ¾ cubic yard mucking bucket loaded with chunks of hard-packed blue clay from tunnel heading. Bucket is lifted and dumped at surface by crane equipped with 35 ft. boom.

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t's being done

Steel liner plates produced by COMMERCIAL for speedier assembly and greater safety factor *prove unanimous choice* of two different contractors on $1,710,000 Indianapolis storm interceptor sewer project.

Contracts for the nearly two miles of tunneling involved in the East Michigan Street storm sewer job at Indianapolis, Indiana were awarded to two separate firms. And here's what they had to say about their independent choice of COMMERCIAL steel tunnel liner supports:

"No other liner plate can compare with COMMERCIAL for easier and faster installation and assembly," says Mr. Porter Williams, Secretary of the Thompson Construction Company. "And among all steel tunnel liner designs, we are firmly convinced there is none safer than COMMERCIAL's," he added.

"We have been using COMMERCIAL tunnel liner plates exclusively for three years," commented Mr. Don Bixler, President of the Tousley Construction Company. "Their consistent size and uniformity simplifies placement and speeds fastening," he continued.

The Thompson Construction Company is handling 5400 feet of the tunnel project—two sections of 48" and 84" in diameter. Both sections are being tunneled simultaneously but in opposite directions through hard-packed blue clay soil. The 84" diameter tube will house a 60" I.D. pre-cast concrete pipe, while the 48" section will enclose a similar 18" pipe. Space between pipe and liner shell will eventually be filled with concrete. In addition, twelve 21 ft. deep vertical shafts, each fitted with manholes for future access, will be dug at strategic points along the complete length of the tunnel.

The Tousley Construction Company, on another contract, is constructing 4500 feet of tunnel, 900 feet of which will be 10 ft. in diameter and the balance of 3600 feet 11 ft. in diameter. Pre-cast concrete pipe 96" and 102" in diameter will eventually line the entire tunnel. Progress on the job, which will also include six 30 ft. deep vertical shafts for future access, is moving along at the rate of 12 feet per day in spite of the hard-packed blue clay and water seepage complications involved.

For more complete details on how COMMERCIAL steel liner plate can simplify and speed up your vertical shaft, surface or sub-surface tunnel project—help make it safer—send today for your copy of Bulletin 300-CI. With over 25 years experience in the design of supports for soft ground or rock excavation, COMMERCIAL's engineers may be able to suggest a more workable and economical solution to your particular support design problem whatever it may be. Address: Commercial Shearing & Stamping Company, Dept. E-47, Youngstown 1, Ohio.

10 FEET PER DAY is average rate of progress in each of the concurrent Thompson tunnels. As fast as mucking operation progresses, 3/16" thick COMMERCIAL liner plates are rapidly installed by the head miners. The size and uniform shape of the plates facilitate their storage alongside mucking car tracks.

NO OUTSIDE BOLTING—Deep flange which surrounds all four sides of COMMERCIAL plate eliminates this hazard. All head miner does is to position plate, line up accurate pre-punched bolt holes, insert 3/4" quick acting bolts and tighten nuts with a pin wrench. No fear of loose fit because inside through-flange connections eliminate need of outside support for bolt heads.

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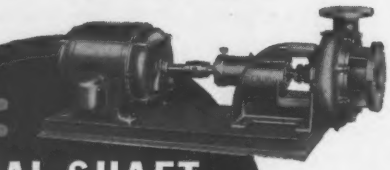

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provides regulation of capacity and head, and adjustment for impeller wear. This can be performed while pump is operating. Bulletin 4011-C.

Just one of the many Deming pump features that provide longer life and fower operating costs

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applied, this rule will attain exactly the same result as the rule previously stated."

• **Recovery of cost**—Other than the two remedies mentioned, the contractor may seek, as an alternative remedy, a judgment for the reasonable value of the work, labor and materials actually rendered before the owner's breach.

Under Maryland law the contractor in this action may seek all the above remedies and the court can apply the remedy it thinks offers fair relief.

(1) Petropoulos v. Lubienski, 152 A. 2d 801, Court of Appeals of Maryland, June 25, 1959.

Sub Must Pay Legal Fees As Part of Damages

Under New Jersey law, legal fees may be considered as part of the damages arising from a subcontractor's failure to perform his contract free and clear of liens.

Wortmann & Sons, Inc., general contractors on construction of federal buildings, recovered legal costs under this ruling. Wortmann subcontracted part of the work to L & R Construction Co., Inc. L & R, in turn, subcontracted part of its work to Frommeyer and Co.

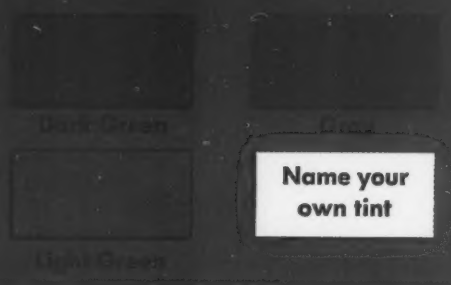
When L & R failed to pay Frommeyer, the latter sued and secured a judgment against both L & R and Wortmann. Wortmann's liability arose under the Miller Act, which requires a payment bond on federal construction contracts over $2,000.

During the suit, Wortmann counterclaimed against L & R for attorneys fees and the amount Wortmann had to pay Frommeyer. Wortmann's claim was based on a performance bond, executed by L & R, that indemnified Wortmann against costs or damage arising from L & R's failure to perform its contract free and clear of liens.

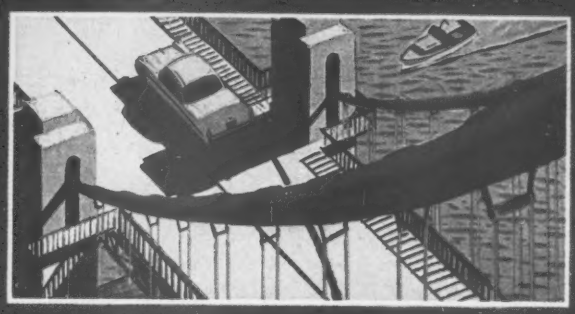
Wortmann won its point, but L & R appealed. It contested the trial court's decision to award Wortmann $5,000 in attorneys fees as part of the damages. The appellate court ruled that, under New Jersey laws, the attorneys fee is a proper element of damage in this case.[1]

(1) Frommeyer v. L & R Construction Co., Inc., 261 F. 2d 879, U. S. Court of Appeals, December 17, 1958.

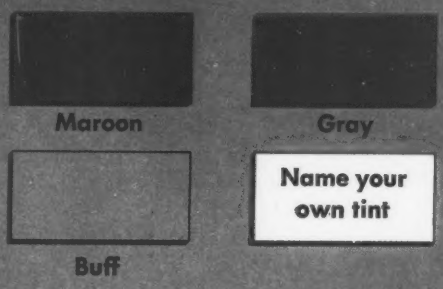
These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Contractors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*



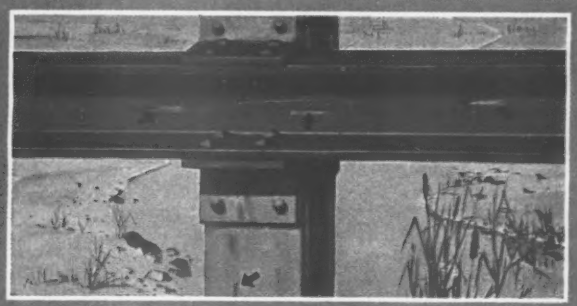
Never before weather-resisting tinted *finishes* that are also rust inhibitive . . .



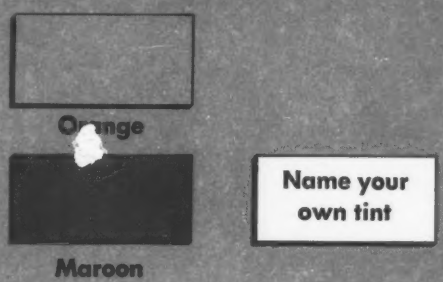
Now you can give steel structures distinctive color . . . or decorative color . . . along with greater durability than ever



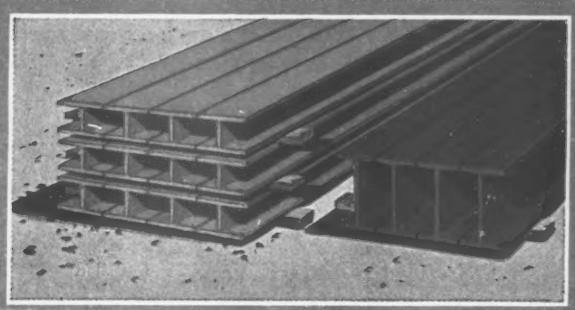
Never before tinted *intermediates* that are *both* weather resistant and rust inhibitive . . .



Now you can specify intermediate colors in sharp contrast and aid visual inspection for "holidays"



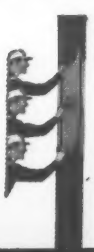
Never before anti-corrosive *primers* that are also tintable and weather resistant.



Now you can eliminate on-the-job mix-ups by using structurals shop-primed in *coded* M50 pigment colors

Proof M50 pigment Defense in Depth paints deliver color opportunities entirely beyond those of ordinary anti-corrosive paints

Wide color choice has never before been available in *all* types of anti-corrosive specification paint systems. Now *M50* basic lead silico chromate pigment* gives you an entirely new color specification freedom . . . in primers as well as intermediates and finishes . . . along with all-coat rust inhibition, all-coat weather resistance. Some of the opportunities this presents are suggested above. You'll think of others.



M50 Defense in Depth

. . . And never before such *durable* color. See next page for proof . . .

*Registered trademark of

National Lead Company

General Offices: 111 Broadway, New York 6, N.Y.

For more facts, turn page

A. No visible discoloration from atmospheric conditions

Contrast areas marked **A** in photo (top at right) of paint test panels exposed 18 months. You can see *M50* pigment paint is free of discoloration caused by atmospheric conditions.

B. No objectionable whitening from normal chalking

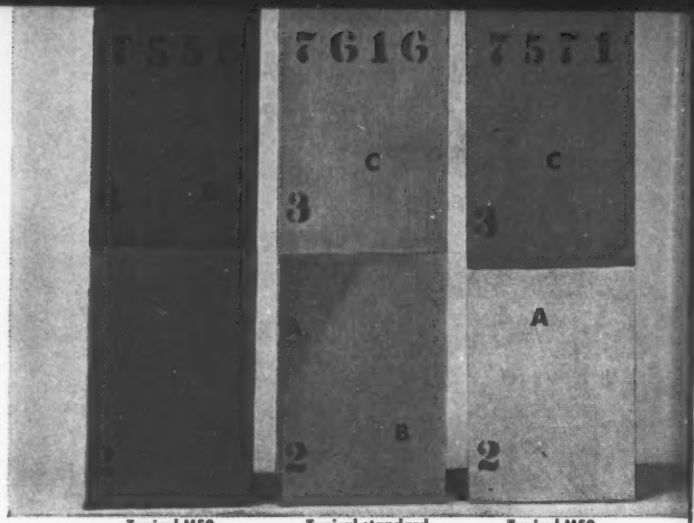
Now compare areas marked **B**. Notice the brightness of color in the *M50* pigment paint. A finger drawn across this paint shows no mark from rubbed off chalk.

C. No noticeable leaching from water action

Look closely at areas marked **C**. Can you see where the non-*M50* paint has been leached by rain water to expose vertical brushmarks in the undercoat? Insoluble *M50* pigment prevents this film failure.

D. No excessive fading from light action

This time examine the close-up (bottom photo at right) of a 9-year *M50* pigment primer exposure test. Contrast between the area shaded by a wooden panel holder and the non-shaded area shows excellent tint retention conferred by *M50* pigment.



3-mil M50 pigment primer exposed 9 years, 45°S

M50 pigment paint tints stay brighter, retain hue longer ...they're protected against all 4 causes of color loss

No need to amplify what the illustrations on this and the preceding page show. Plainly, *M50** pigment Defense in Depth paints give you more color freedom, more color durability than ever before available in metal protection paints. More rust inhibition, more weather resistance, too. In every coat!

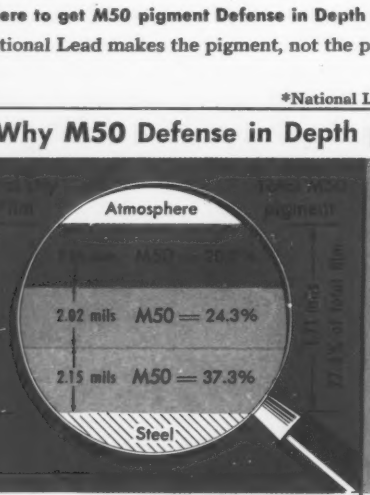
Where to get M50 pigment Defense in Depth paints

National Lead makes the pigment, not the paints. So the place to go for *M50* pigment specification paints themselves is your regular supplier. However, National Lead can help you familiarize yourself with these new paints in four ways: (1) show you *M50* pigment paint exposure test panels at its Sayville, L. I. Test Station; (2) send you a 24-page descriptive brochure, "Defense in Depth." (Mail coupon below); (3) provide technical aid in test applications; (4) help you develop suitable specifications for paints containing *M50* pigment.

For M50 pigment paints themselves, contact your regular suppliers.

*National Lead Company trademark for a basic lead silico chromate pigment

Why M50 Defense in Depth paints give you metal protection beyond all former concepts

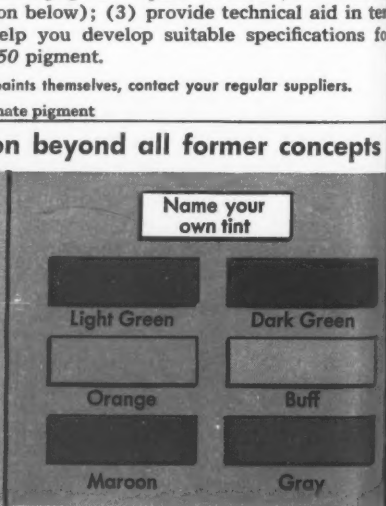


In every coat...rust inhibition! Fused lead chromate is noted for rust-inhibition. The *M50* pigment particle structure permits paint makers to include large proportions of lead chromate in all coats of anti-corrosive systems.

2 M50 pigment alkyd primer coats
Exposed 9 yrs 45°S
Each coat 1.5 mils dry film

M50 pigment finish put on rusty steel
Exposed 4 yrs 45°S
in industrial atmosphere

In every coat . . . weather resistance! *M50* pigment is insoluble in water and has the excellent tint retention properties of fused lead chromate. Unlike other rust inhibitors, it actually boosts weather resistance of paints.



In every coat...your choice of colors! *M50* pigment gets along well with most tinting pigments, permits paint makers a wide range of colors...not only in intermediates and finishes but in primer coats as well. Colors stay true.

M50 Defense in Depth

National Lead Company,
111 Broadway, New York 6, N. Y.

Gentlemen: Please send me your 24-page brochure, "Defense in Depth." Include color card of the six *M50* pigment paints you recommend for steel highway structures.

Name_____ Title_____

Firm or Dept._____

Address_____

City_____ State_____

Books

Constants for Frames

FRAMES AND ARCHES—By Valerian Leontovich. 472 pages. McGraw-Hill Book Co., New York, Toronto, London. $20.

Strictly a reference book, this volume gives formulas for 20 different single-span, symmetrical frames and arches. Since 20 different loading cases are covered for each frame and arch, the book presents a total of 400 solutions.

The book consists of two parts. Part 1 deals with frames and arches made up of members with constant moment of inertia. Part 2 covers those with variable cross section. In a preface, S. P. Timoshenko, professor emeritus of engineering mechanics, Stanford University, says of Part 2: "Since the author's method is substantially shorter than any other in current practice, his approach should, no doubt, be favored by designers."

In each of the solutions, formulas are given for the redundants of the statically indeterminate structure. Only algebra is involved, and generally slide rule calculation will give the values of the redundants with sufficient accuracy for most purposes. After the formulas given in the book have been solved, moments, shears and thrusts throughout the structures can be obtained easily by application of the principles of static equilibrium.

The author derived the formulas by use of the elastic center concept and certain elastic parameters, which depend only on the shape of the members, and load constants, which depend on both shape and loading. Charts and tables simplify determination of these constants and parameters for several commonly used shapes.

Manual on Roofing

ROOFING—ESTIMATING, APPLYING, REPAIRING—By James McCawley. 426 pages. Shelter Publications, 180 N. Wacker Drive, Chicago 6, Ill. $10.

This is an excellent reference book on roof coverings. It deals with the most common methods and materials currently used. And it discusses both new construction and repairs.

Because the behavior of roofing depends to a great extent on the type of roof deck to which it is applied, the author places heavy emphasis on roof deck construction and methods of fastening to the deck. Flashing also comes in for a great deal of attention. Diagrams contrast the right and wrong ways to do a job.

Separate chapters are devoted to the application of builtup roofing on various types of decks, coverings on steep slopes, metal and asbestos roofing and applications of plastics, including skylights. In the chapter on builtup roofing, several devices developed to mechanize the operation are described.

Other chapters deal with cost estimating, insulation and temperature control, drainage and effects of building movement on roofing.

How to Compute Steel Costs

ESTIMATING STRUCTURAL STEEL—By George A. Saunders. 274 pages. McGraw-Hill Book Co., New York, Toronto, London. $9.50.

This book will fill a long-felt need for a detailed explanation of the technique of estimating the cost of structural steel in place. It should be invaluable in training estimators for steel fabricators and erectors. It also should serve as a guide to engineers interested in improving the accuracy of their steel estimates.

Many engineers compute the cost of steel in place by multiplying the tonnage by a price per ton based on past experience and judgment. Actually, the estimate should be based on many factors: complete material take-off, material base cost, mill extras, fastener costs, paint, shipping and handling expenses, fabrication costs, drafting charges, erection expenses, insurance, overhead, taxes and allowance for profit. This book tells how to make an estimate taking these important elements into account.

Since costs depend greatly on fabrication and erection procedures, the author describes fabrication and erection equipment, discusses the layout of fabricating shops and the handling of material in them and outlines field assembly. He also discusses specifications, insurance and bonds. Material supplementary to the structural frame, such as stairs and grating, are covered in one chapter.

Looking to the future, the author has included a chapter on structural aluminum. "Many steel fabricators," he points out, "have equipment that can be employed with aluminum, and with the adoption of some new techniques they can readily fabricate this material. The cost of aluminum is greater than that of steel, but other factors must be considered that will encourage the use of this material."

Complete estimates are given in an appendix for an office building and a highway bridge.

(*Books continued p. 138*)

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Compact, simplified P&H Diesel design results in easier maintenance—25% fewer parts, with all fittings easy to get at. All wearing parts are interchangeable. P&H Diesels in 2, 3, 4 and 6-cylinder models range from 40 to 320 h.p. See your P&H distributor, or write Dept. 412A, P&H Diesel Engine Division, Harnischfeger Corporation, Crystal Lake, Illinois.

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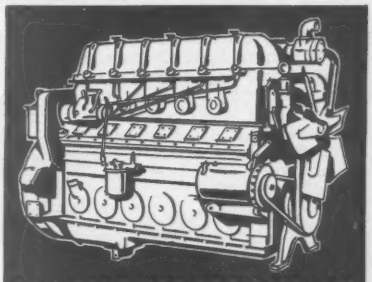

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WHEN & WHERE . . . ∨ to contact the people who may influence the purchase or actually place the order

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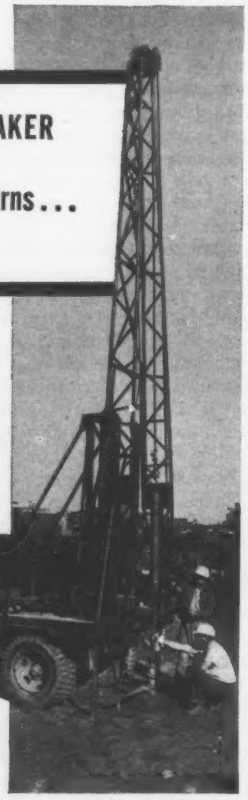

Robert J. Kriz of Herron Testing Laboratories, Cleveland, Ohio says, "Since using the PACEMAKER with *Hollow Stem* in our foundation testing operations, we are producing more with three crews than we were with four of our conventional crews. Even on big jobs, *one operator can keep two men busy sampling and recording.*"*

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Just Published . . .

ROOFING: Estimating, Applying, Repairing —by James McCawley. 426 pages. Shelter Publications, 214 North Karlov Ave., Chicago 24, Ill.

CALCUL A LA RUPTURE ET PLASTICITE DES CONSTRUCTIONS—by A. R. Rjanitsyn. 286 pages. Editions Eyrolles, 61, boulevard Saint-Germain, Paris Ve, France.

TECHNOLOGY IN AMERICAN WATER DEVELOPMENT—by Edward A. Ackerman and George O. G. Lof. 720 pages. The Johns Hopkins Press, Baltimore 18, Md.

RAILROAD TRANSPORTATION AND PUBLIC POLICY—by James C. Nelson. 544 pages. The Brookings Institution, 722 Jackson Place, N.W., Washington, D. C. $7.50.

DIGITAL COMPUTER PRIMER—by E. M. McCormick. 205 pages. McGraw-Hill Book Co., Inc., 330 West 42nd St., New York 36, N. Y. $7.50.

USINES DE DERIVATION: VOLUME I AND VOLUME II—Editions Eyrolles, 61, boulevard Saint-Germain, Paris Ve, France.

AN INTRODUCTION TO CHEMICAL ENGINEERING—by Charles E. Littlejohn and George F. Meenaghan. 271 pages. Reinhold Publishing Corp. 430 Park Ave., New York 22, N. Y. $7.80.

ADVANCED STRUCTURAL ANALYSIS—by S. F. Borg and Joseph J. Gennaro. 368 pages. D. Van Nostrand Co., 257 Fourth Ave., New York 10, N. Y. $7.50.

ENGINEERING DRAWING—by Eugene G. Pare. 500 pages. Henry Holt & Co., 383 Madison Ave., New York 17, N. Y. $6.50.

ENGINEERING DRAWING PROBLEMS—by E. V. Mochel, Henry Holt and Co., 383 Madison Ave., New York 17, N. Y. $4.50.

NUCLEAR REACTOR PLANT DATA: Volume II: RESEARCH AND TEST REACTORS—297 pages. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $7.50.

A RECORD OF HISTORY AND EVOLUTION OF EARLY AMERICAN BRIDGES—by Llewellyn N. Edwards. Mrs. Llewellyn N. Edwards, Stonehaven, Glen Echo, Md. $5.00.

ELECTRIC MOTORS & GENERATORS ILLUSTRATED—384 pages. Philosophical Library, Inc., 15 East 40th St., New York 16, N. Y. $12.00.

CONCISE DICTIONARY OF SCIENCE—by Frank Gaynor. 546 pages. Philosophical Library, Inc., 15 East 40th St., New York 16, N. Y. $10.

AIR POLLUTION CONTROL—by W. L. Faith. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $8.50.

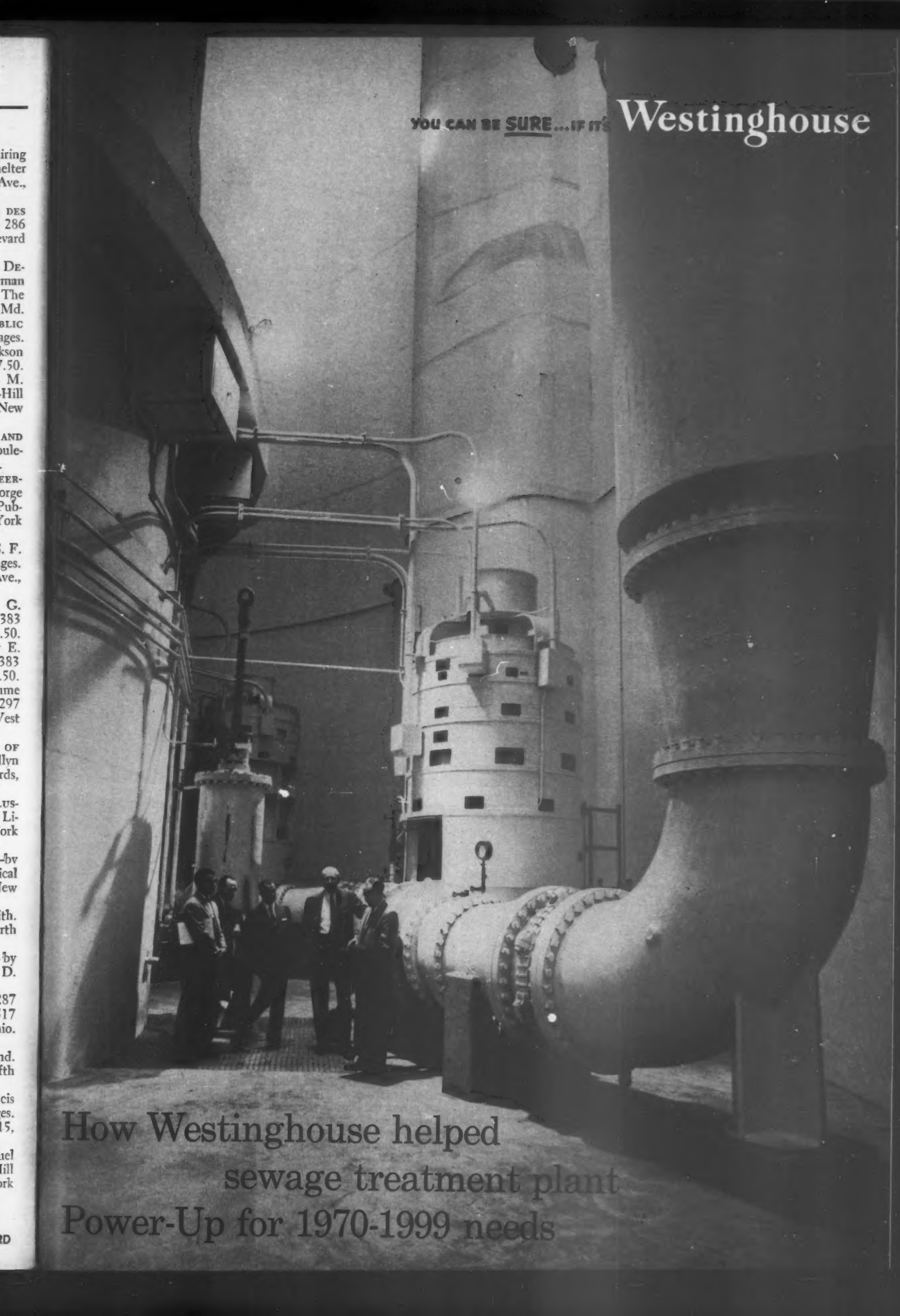
ENGINEERING AND ORGANIZATION — by Everette Laitala. 391 pages. Richard D. Irwin, Inc., Homewood, Ill. $7.20.

BOLT, NUT AND RIVET STANDARDS—287 pages. Industrial Fasteners Institute, 1517 Terminal Tower, Cleveland 13, Ohio. $3.00.

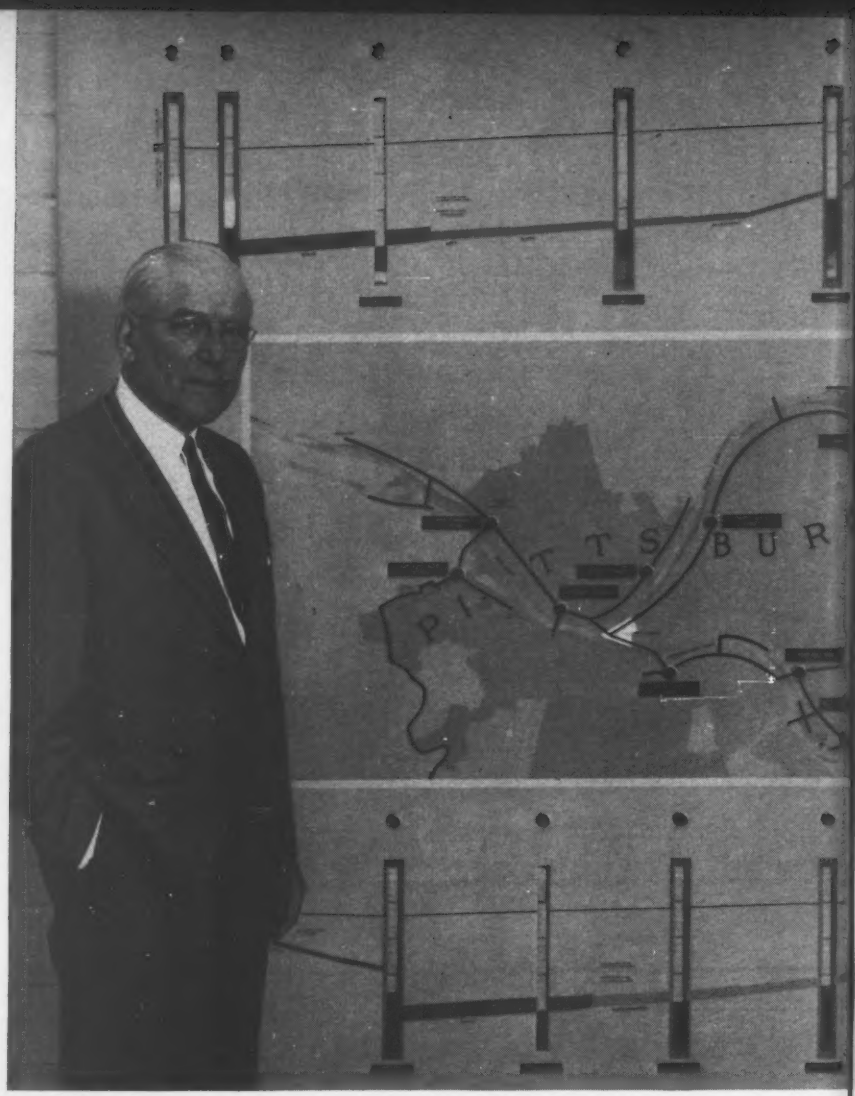
TUNNEL ENGINEERING—by Rolt Hammond. 332 pages. The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. $11.00.

SURVEYING—by Harry Bouchard and Francis H. Moffitt. Fourth edition. 664 pages. International Textbook Co., Scranton 15, Pa. $10.50.

DIGITAL COMPUTING SYSTEMS—by Samuel B. Williams. 229 pages. McGraw-Hill Book Co., 330 West 42nd St., New York 36, N. Y. $7.75.


YOU CAN BE SURE...IF IT'S Westinghouse
How Westinghouse helped
sewage treatment plant
Power-Up for 1970-1999 needs

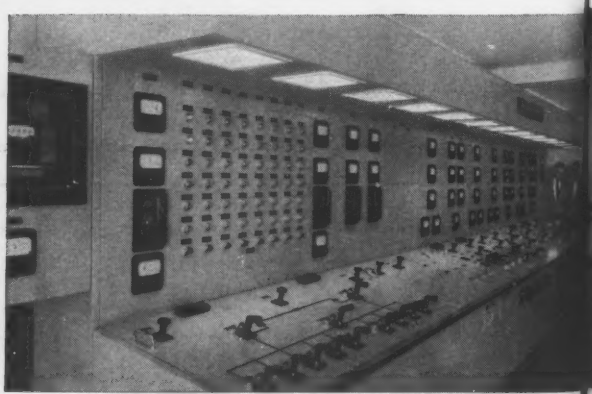
Front Cover: View in dry well of main sewage pump driven by Westinghouse 450/1250-hp 2-speed vertical synchronous motor in foreground. Constant-speed 800-hp motor in background drives its pump through a variable-speed magnetic coupling. Dry well is illuminated with Westinghouse VEK-16 floodlighting. Discussing installation are: A. B. Janaszek, Westinghouse Sales Engineer; M. B. Trimble, Westinghouse Construction Engineer; N. J. Grady, Devlin & Ernst, Electrical Contractors; J. F. Laboon, Executive Director and Chief Engineer, Allegheny County Sanitary Authority; A. A. Thomas, Engineer for Operations, Metcalf & Eddy, Consulting Engineers.



J. F. Laboon, Executive Director and Chief Engineer of Allegheny County Sanitary Authority, shown beside system flow panel of the $100 million trunk sewer and treatment plant project which serves 70 separate communities. The mimic diagram depicts flow conditions throughout a 69-mile network of tunneled interception sewers. The plant and its operation incorporate the process of concentrating undigested sludge for incineration.

J-94134-2

Examining sewage treatment system plans in the director's office are N. J. Grady, M. B. Trimble, A. B. Janaszek, J. F. Laboon and A. A. Thomas.



Over-all view of the main duplex control board installed in the sewage pump station. This board centralizes control of the incoming power feeders, indicates alarm conditions for each main sewage pump and also provides centralized control of pump motor speeds and performance. Shown at far end of control board are A. A. Thomas, A. B. Janaszek, J. F. Laboon and N. J. Grady.

Pittsburgh Sewage Treatment Plant builds for population growth of next 40 years

Planning by the Allegheny County Sanitary Authority went far beyond today's needs to anticipate the requirements of 1970 and beyond, to the year 2000. The new Pittsburgh Sewage Treatment Plant which serves the combined populations of 70 separate communities is now capable of handling the increased demands of 1970 populations. In addition, those structures and conduits which are not readily expandable are designed for the ultimate flow demands of the year 2000.

The Westinghouse electrical distribution system specified was planned with the same anticipation of future needs. Each component was selected to perform as part of the completely coordinated system. The entire system is capable of ready expansion to meet the increased power requirements of the future operating load of the plant.

Westinghouse electrical equipment supplied to Power-Up this 150-mgd sewage treatment project (max. rate, 300 mgd) includes:

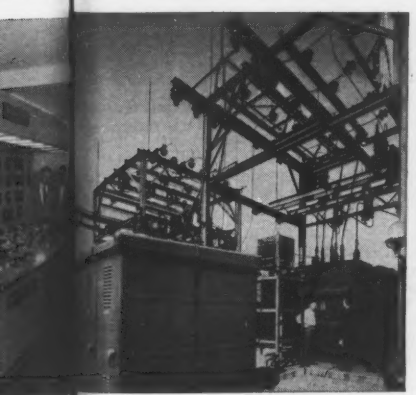
- 10,000-kva outdoor substation.
- Main pump control board.
- Three main sewage pump motors (vertical, synchronous), 1250/450 hp, two speed, two frame.
- Two main sewage pump motors (vertical, synchronous), 800 hp, 400 rpm.
- Two major assemblies of high-voltage fused starters and metal-clad switchgear.
- Five indoor dry-type power centers (150 to 3000 kva).
- Seventeen motor control centers as well as panelboards, dry-type transformers and standard controls.
- Westinghouse Life-Line® motors and gear drives which are utilized on pump, conveyor and auxiliary drives.

(contd.)

YOU CAN BE **SURE**...IF IT'S

Westinghouse

J-94134-3



General view of outdoor substation at Pittsburgh Sewage Treatment Plant. Shown is Westinghouse metal-clad switchgear used for incoming line, bus-tie and distribution service, as well as one of the 5000-kva oil-insulated power transformers at the station. Also shown are Westinghouse disconnect switches, grounding resistors and outdoor substation structure. M. G. Grasha, Plant Electrical Engineer, discusses installation with M. B. Trimble.

A. A. Thomas, J. F. Laboon, N. J. Grady and A. B. Janaszek shown in main control room with line-up of Westinghouse Ampgard* fuse starters for control of the main sewage pumping motors. Metal-clad switchgear in the middle of the assembly provides incoming line protection for each starter group.

*Trade-Mark

M. B. Trimble and M. G. Grasha inspect electrical equipment in administration building basement. At right is rear of motor control center close-coupled to 150-kva dry-type power center transformer; at left is a 75-kva Type DT-3 dry-type transformer feeding a Westinghouse NLAB lighting panelboard.

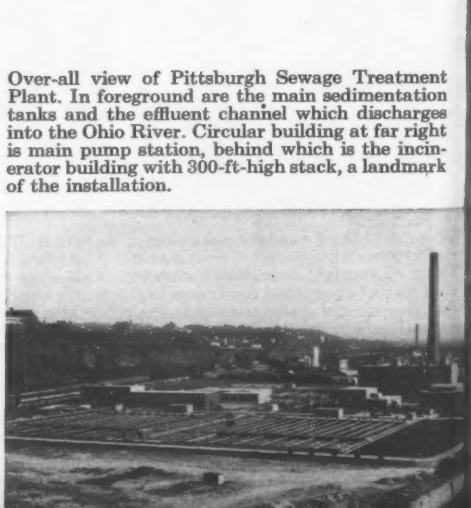
General view of main pump station looking from the bottom of the dry well up to the main operating floor level 120 feet above.

Sewage plant builds for next 40 years (contd.)

Powering-Up electrically for future growth provides many initial and future savings in public works projects. For information as to what such savings can mean to you, call the Westinghouse electrical construction engineer nearest you, or write: Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania. J-94134-4

OWNER: Allegheny County Sanitary Authority
CONSULTING ENGINEERS: Metcalf & Eddy, Boston, Mass.
CONSULTING ARCHITECTS: Celli-Flynn, McKeesport, Pa.
ELECTRICAL CONTRACTORS: Devlin & Ernst, Pittsburgh, Pa.

Over-all view of Pittsburgh Sewage Treatment Plant. In foreground are the main sedimentation tanks and the effluent channel which discharges into the Ohio River. Circular building at far right is main pump station, behind which is the incinerator building with 300-ft-high stack, a landmark of the installation.



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Fort Worth Expands Water Supply

Steel ground storage reservoir takes $265,200 contract from prestressed concrete alternate

Addition to the Fort Worth, Tex., water distribution system of a steel ground storage reservoir, feeder main, and appurtenances, will cost the city $614,142.

Let in two contracts, the cost breaks down like this:

Contract	Amount	% of Total
*Russom Ranch Reservoir		
Site work, etc	$20,935	3.4
Steel tank & appurtenances	244,265	39.8
**Feeder main & appurtenances	348,942	56.8
Total cost	$614,142	100.0

*Gorbett Bros. Steel Co., Fort Worth
**Sira & Payne, Dallas

The reservoir award was 16.3% under the engineer's estimate, and the feeder main contract was 25.5% under. Freese, Nichols & Endress, Fort Worth, is the consultant.

Alternate bids taken on the 9.2 mg ground storage reservoir yielded six bids on the steel reservoir and three on the prestressed concrete alternate. The $265,200 award was on the steel tank, 16% under the concrete reservoir alternate. It averages $28,826 per mg of capacity. Reservoir will be 30 ft high and 230 ft in diameter.

The contract includes painting outside of tank, a chain link fence, silicon iron cathodic protection system, valve vault and valves, sump pump and a level transmitter.

The 13,458 ft of feeder main will be 42 in. and 36 in. prestressed concrete-lined cylinder pipe fitted with rubber gasket joints, class 125 psi, AWWA C-301-55T.

Class A and B concrete must attain a compressive strength of 3,000 psi. Cast iron pipe, class A & B, is ASA-A21.1.

The city furnishes the large size gate valves.

Rail and truck transportation is accessible to the site.

Prevailing wages in Fort Worth include: carpenter $3.25; pipe layers $1.925; boilermaker $3.60; common laborer $1.70; concrete finisher $3.25; iron workers, welders $3.425; painters, brush $3.00, stage & sprav $3.25; truck drivers, flat bed truck $2.00, dump truck $2.15.

Included in the tabulation below are the bids on the steel reservoir, on which the award was made, as well on the alternate prestressed concrete reservoir.

Steel Reservoir

1C Corbett Bros. Steel Co., Inc., Fort Worth	$265,200
2 Graver Tank & Mfg. Co., Houston	283,080
6 Pittsburgh-Des Moines Steel Co., Dallas	311,800
EE Freese, Nichols & Endress, Fort Worth	317,000

Bids: 9-15-59 Items	Unit	Quantity	Unit Prices 1C	2
Exc matl from reservoir area, haul, place & compact in designated area	cy	12,000	$1.20	$0.95
Chain Link fence f&i	ls	job	3,485	3,280
Concrete, furn & place	cy	50	47.00	45.60
Reinf stl, ASTM-A15 or A16	lb	5,000	0.14	0.135
Steel reservoir, compl w fndn & all access	ls	job	190,345	215,400
Viv vault compl w pipe, butterfly viv, sump pump, level transmitter	ls	job	13,370	10,635
Paint tank & accessories	ls	job	34,200	33,470
Silicon iron cathodic prot sys for reserv f&i	ls	job	6,350	5,940

f&i Furnish & instal
Completion schedule: 200 working days
Liquidated damages: $75/day

Alt. Concrete Reservoir

1 B. B. Adams, Fort Worth	$317,713
2 United Contracting Co., Dallas	320,750
3 Hoffman & Borders, Waco, Texas	330,000
EE Freese, Nichols & Endress, Fort Worth	317,000

Bids: 9-15-59 Items	Unit	Quantity	Unit Prices 1C	2
Exc matl from reservoir area, haul & compact in designated area	cy	12,000	$1.56	$1.00
Chain link fence f&i	ls	job	3,300	4,000
Concrete, furn & place	cy	50	55.00	30.00
Reinf stl, ASTM-A15 or A16	lb	5,000	0.15	0.15
Constr prestr conc reservoir, compl with fndn & accessories	ls	job	278,893	287,000
Viv vault compl w pipe, butterfly viv, sump pump level transm & 4" center drain line	ls	job	11,000	13,000
Painting outsd wall surf	ls	job	2,300	2,500

Feeder Main

1C Sira & Payne, Dallas	$348,942
2 Steed Constr. Co., Fort Worth	352,101
8 Lewis & Lewis, Fort Worth	409,132
EE Freese, Nichols & Endress, Fort Worth	468,283

Bids: 9-15-59 Items	Unit	Quantity	Unit Prices 1C	2
Prstr conc lined cyl pipe w rub gasket jts, cl 125 psi, 42"	lf	8,483	$24.56	$24.90
36"	lf	4,975	18.85	20.30
Access manhole	ea	10	950.00	1,000
Air valve assemblies, 3"	ea	5	210.00	200.00
Blowoff, incl MH viv & pipe, 8"	ea	1	1,570	1,200
12"	ea	1	1,630	1,300
Conn to 24" CI water line	ls	job	3,560	3,600
Gate viv, 36" hor, H.E. with access, instal city furn	ea	3	500.00	650.00
24" hub end, with access, furn & instal	ea	3	1,625	1,900
Future conn, incl CIP & ftgs, 20" at sta 14+90	ls	job	420.00	700.00
78+98	ls	job	1,630	1,800
Conn, incl vlvs, CIP & ftgs, 12", at sta 38+00	ls	job	1,070	1,300
Gran matl, fine, for pipe embed	cy	6,740	2.65	1.30
Conc, 1500#, for blocking, cradle & false bot in trenches	cy	40	15.50	25.00
Pres leakage test, compl line	ls	job	330.00	600.00
Add for each ft of trench depth more than 1 ft below plan grade, for 42" pipe	lf	200	2.50	1.00
36" pipe	lf	100	2.50	1.00
Add not shown on plan, if ordered by engineer, 2500# conc	cy	20	20.00	30.00
reinf stl	lb	1,000	0.13	0.16
Credit for reduced trench depth, more than 1 ft above plan grade	lf	300	0.25	0.30

Completion schedule: 80 days.
Liquidated damages: $75/day.

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Helps Add Years of Service Life to Underground Lines

No other tape can match the 18-year protection record of TAPECOAT, the quality coal tar coating in tape form. Steel pipe and other vulnerable surfaces TAPECOATED back in 1941 still show no signs of deterioration.

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Representatives in Principal Cities
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The Tapecoat Company of Canada, Ltd.
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Materials Prices

Monthly Market Quotations by ENR Field Reporters

LUMBER, TIMBER, PLYWOOD PER M FT.B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2. Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 sdn	1x8 sdn	2x4 sdn	2x6 sdn	2x8 sdn	2x10 sdn	3x12 Rough	6x12 Rough	12x12 Rough	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rough	12x12 Rough	FIR PLYWOOD ¼" Interior plywood, C-D gr.	¾" Ply-form grade*
Atlanta	$97.00	$102.00R	$90.00	$90.00	$100.00	$100.00	$137.00	.....	.....	$117.00	$166.00	$154.00	$270.00
Baltimore	100.00	100.00	105.00	105.00	110.00	110.00	125.00	.....	.....	175.00	190.00	175.00	275.00
	124.00g	*130.00g*	*132.50gR1*	*135.00g*	*135.00g*	*135.00g*	*152.00g*	*$180.00*	*$170.00*				
Birmingham	83.00	85.00	82.00	84.00	89.00	95.00	111.00	.....	.....	115.00	168.00	122.30	214.50
	80.00	*80.00*	*83.00*	*81.00*	*81.00*	*98.00*	*88.00*	*85.00*	*88.00*	.....	.....		
Boston	104.00f	104.00f	111.00f	111.00f	111.00f	122.00a	.....	.....	.....	.....	.....	170.00e	290.00e
	110.00	*111.00*	*119.00*	*119.00*	*121.00*	*124.00R2*	*145.00R3*	*147.00R3*	*168.00R3*				
Chicago	119.00	122.00	116.00	138.00	138.00	139.00	134.00	.....	.....	162.00	162.00	145.50	243.25
	135.00	*135.00*	*138.00*	*136.00*	*136.00*	*137.00*	*145.00*	*145.00*	*145.00*				
Cincinnati	102.50	103.75	96.50	98.00	104.75	112.75	121.00	.....	.....	138.00	125.00	94.00f	180.00f
	110.75	*115.75*	*110.00*	*112.25*	*114.00*	*120.25*	*143.25*	*143.25*	*143.25*	.....	.....		
Cleveland	102.00	105.00	102.00	102.00	104.00	108.00	.....	.....	.....	.....	.....	124.00a	230.00
	.....	.....	*117.00*	*118.00*	*120.00*	*125.00*	*150.00*	*150.00*	*160.00*				
Dallas	76.00k	85.00k	80.00k	80.00k	78.00k	78.00k	125.00	.....	.....	133.00	160.00	112.50ac	200.00ac
Denver	*Not in stock*		*122.50*	*125.50*	*125.50*	*124.50*	*140.00*	*166.50*	*170.00*	.....	.....	145.50	281.50
Detroit	138.00	140.50	138.00	138.00	143.50	143.50	.....	.....	.....	151.50	.....	175.00gc	265.00gcR
	136.25	*136.25*	*147.25*	*145.50*	*154.00*	*159.50*	*193.00*	*215.00*	*215.00*	.....	.....		
Kansas City	120.00	120.00	130.00	132.50	135.00	150.00	.....	.....	.....	.....	.....	150.00	215.00
	120.00	*120.00*	*130.00*	*132.50*	*135.00*	*140.00*	*166.00*	*225.00*	*225.00*	.....	.....		
Los Angeles	*101.00*	*101.00*	*101.00*	*101.00*	*101.00*	*101.00*	*136.00*	*141.00*	*141.00*	.....	.....	120.00	240.00
Minneapolis	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*145.00*	*185.00*	*185.00*	*185.00*	.....	.....	200.00	320.00
Montreal	84.00a	90.00a	84.00a	84.00a	90.00a	125.00a	.....	.....	.....	120.00	120.00	119.25	225.95
	160.00	*160.00*	*160.00*	*160.00*	*160.00*	*160.00*	*170.00*	*170.00*	*170.00*	.....	.....		
New Orleans	89.00	89.00	95.00	95.00	95.00	98.00	126.00	.....	.....	160.00	155.00	111.25	215.00R4
	108.00	*108.00*	*109.50*	*109.50*	*110.00*	*110.00*	*128.50*	*128.50*	*128.50*	.....	.....		
New York	115.00	116.00	125.00	125.00	125.00	131.00	245.00	.....	.....	245.00	255.00	123.20a	207.60a
	.....	.....	*126.00*	*127.00*	*127.00*	*131.00*	*174.00*	*174.00*	*174.00*	.....	.....		
Philadelphia	105.00	105.00	110.00	110.00	110.00	110.00	135.00	.....	.....	.....	.....	150.00kR	270.00k
	.....	.....	*128.00*	*128.00*	*128.00*	*128.00*	*200.00R1*	*200.00R1*	.....	.....	.....		
Pittsburgh	110.00	115.00	130.00	120.00	145.00	145.00	165.00	.....	.....	160.00	165.00	225.00	295.00
	135.00	*115.00*	*140.00m*	*150.00*	*155.00*	*160.00*	*220.00*	*200.00*	*200.00*	.....	.....		
St. Louis	114.00	116.00	122.00d	124.00d	124.00e	126.00e	.....	.....	.....	.....	.....	170.28achj	268.07ach
	.....	.....	*133.00*	*145.00e*	*133.00e*	*135.00e*	*192.00e*	*192.00e*	*192.00*	.....	.....		
San Francisco	*88.00*	*88.00*	*92.00*	*92.00*	*92.00*	*92.00*	*106.00*	*127.00*	*127.00*	.....	.....	92.00k	175.00k
Seattle	*65.00*	*75.00*	*78.00*	*78.00*	*78.00*	*79.00*	*96.00*	*95.00*	*95.00*	.....	.....	110.00aeg	200.00aeg
Toronto	88.00a	90.00a	89.00a	88.00a	90.00	89.00a	103.00a	.....	.....	89.00a	.....	256.00	305.50
	112.00	*112.00*	*108.00*	*120.00*	*125.00*	*125.00*	*133.00*	*135.00*	*135.00*	.....	.....		

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to centr. CL.

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Federal tax exempt, add 6% mun. & prov. tax. *c 5M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Add 2% sales tax. *n Less 2% disc. 10 days. *o Less 2% disc. 10th. *p Less 1% disc. 10 days. *q fir: $80.25 in truck lots, fob job or CL, f.o.b. city. *r For f.o.b. city price add $8 for pine, $38 for fir eff. 1/1/58. *s asd trucklots. *t trucklots del. *u Retail LCL yard. *v Retail LCL, del. *w add 6% mun. & Prov. tax. *x add 4% sales tax.

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, ¼", $156.00; ⅜", $176.00 Exterior, waterproof, ½", $160.00; ¾", $180.00. *a Delivered. *c Truck lots. *d A-C exterior. *e LCL. *f less 1%, 5 days. *g less 2% for cash. *h less 2% disc, 10 days. *j add 2% sales tax.

LUMBER: *R1 Revised eff. Sept. 1. *R2 Oct. price revised to 125. *R3 Revised eff. Oct. 1. *R4 Revised eff. June 1.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 500 lb. lots
Atlanta	78%	80%g	$0.2495
Baltimore	74%d	74%d	.2695
Birmingham	82%f	82%f	.2495
Boston	72+10%p	72+10%p	.2695
Chicago	72%	72%	.2695
Cincinnati	74%	74%	.2495
Cleveland	74–2–10%	74–2–10%	.2495
Dallas	76%	76%	.2770
Denver	73.5%	73.5%	.2695
Detroit	74–10–10%	74–10–10%	.2695
Kansas City	76–10–10%	76–10–10%	.2695
Los Angeles	$12.88/17.32h	$10.45/14.13h	.2695
Minneapolis	71–10%	71–10%	.2695
Montreal	40–10–5%b	40–10–5%b	23.20h
New Orleans	76%a	76%a	.2695
New York	79%l	79%l	.5030q
Philadelphia	78%	80%	.2695
Pittsburgh	72%	73%	.2495
St. Louis	72–10–10%mo	72–10–10%mo	.2695
San Francisco	60%	73%	.2695
Seattle	$8.85/11.55hiq	$8.41/8.67hjp	.2695
Toronto	$8.40/9.57h	$5.90/8.70h	

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss. $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% for single strength. *d From 6/15/52 list. *e 77% for double strength. *f Single strength; double strength, 83%. *g From 8/1/58 list. *h ss/ds, 40-in. *i 20 boxes min. *j CL quantity. *k eff. 12/58. *l eff. 10/15/58. *m less 2% disc, 10 days. *n less 1% disc, 10 days. *o add 2% sales tax. *p less 1% for cash. *q less 2% for cash

Explosives: Cartridges of 1¼" diameter or over, in standard lengths. *g deliveries in certain areas must be by truck or by truck and boat, requiring extra charge. *h F.o.b. Beloeil (near Montreal), per 100 lb., lots under 2000#, wood cases, forcite, 40%. Forcite 60%, $23.80 in fiber cases: forcite 40%, $23.20; forcite 60%, $24.95.

40% Ammonia Gelatin price ranges in other than urban areas, per lb: (except Seismograph Grades)

	C/L 300,000 lb. lots	10,000 lb. lots	2,000 lb. lots	200 lb. lots
Group 1*	$0.2695	$0.2795	$0.2545	$0.2695
Group 2†	.2170	.2270	.2620	.2770

* All areas except those in Group 2 and N.J. cities of Bayone, Hoboken, Jersey City, No. Bergen, Union City and Weehawken † Florida counties of Manatee, Hardee, Highlands, Okeechobee, St. Lucieand south thereof; Idaho; Maine; Montana; New Mexico counties of Catron, Socorro, Lincoln, De Baca, Roosevelt and south thereof; Texas counties of Bailey, Lamb, Hale, Floyd, Motley, Cottle, Hardeman, Foard, Knox, Haskell, Jones, Taylor, Coleman, McCulloch, San Saba, Burnet, Williamson, Milan, Robertson, Leon, Houston, Angelina, Nacogdoches, Shelby and south thereof.

PILES, TIES

PILES

Prices per linear foot, fir and pine, rough peeled, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine under fifty feet based on freight from mid-South, over fifty feet, on freight from deep South.

Dimensions	Points	Length	By Rail Pine*§ R	Fir R
12" at butt	6-in.	30 to 39-ft.	$0.32a	....
12"—2-ft. from butt	6-in.	40 to 44-ft.	.69	....
12"—2-ft. from butt	6-in.	45 to 49-ft.	.73	....
12"—2-ft. from butt	6-in.	50 to 54-ft.	.77	....
12"—2-ft. from butt	6-in.	55 to 59-ft.	.81	....
14"—2-ft. from butt	6-in.	60 to 64-ft.	.87	....
14"—2-ft. from butt	6-in.	65 to 69-ft.	.92	....
14"—2-ft. from butt	6-in.	70 to 74-ft.	1.02	1.07
14"—2-ft. from butt	6-in.	75 to 79-ft.	1.07	1.07
14"—2-ft. from butt	5-in.	80 to 84-ft.	1.17	1.10
14"—2-ft. from butt	5-in.	85 to 89-ft.	1.27	1.15/1.20

* Pine piling over 90 feet available only in limited quantities. § ASTM Class B
* a, trucked in from N. J.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 9" x 8'6" Untr.	7" x 9" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	.....	4.00a	.....	4.50a
New York	S. L. Sap Pine	2.50	4.00	3.00	5.00
	Mixed Oak	2.50	4.00	3.00	5.00
Philadelphia	Mixed Oak	2.38	3.97	2.78	4.57
St. Louis	Mixed Oak	2.65	3.10a	3.10k	3.75ak
San Francisco	Douglas Fir	2.66ef	3.73ef	3.52ef	4.90ea

Tr.—Treated; Untr.—Untreated. aCreosoted. c Empty cell. e Green f.o.b. cars. g 7 x 9 x 8'6" * Add 75¢/tie freight charge to Birmingham. *h 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb.	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb.	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	21.20

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Oct. 29; Next, Dec. 3.
- Wage Rates, Building Board, Lath, Insulation: Last, Oct. 29; Next, Nov. 26.
- Cement Aggregates, Ready-mixed Concrete, Asphalt: Last, Nov. 5; Next, Dec. 10.
- Iron & Steel Products, Pipe: Last, Nov. 12; Next, Dec. 17.

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† Connecticut—BA 12/1—U. S. Eng., 424 Trapelo Rd., Waltham 54, Mass., maintenance dredging Mill River, New Haven Harbor, CIVENG-19-016-60-15.

† Me., Bangor — DIRECTION FINDING UHF,AN/CRD-6 FACILITY—BA On Or About 12/2—U. S. Eng., 562 Congress St., Portland, relocation and reconstr. Direction Finding UHF,AN/CRD-6 facility, Dow Air Force Base, ENG-19-016-60-32. Plans deposit $10. CD 10/29.

BUILDINGS—BA

R. I., Greenville—SCHOOL, etc.—BA 11/25—St. Philip's Parish, Chancery Office, 94 Fenner St., Providence, elementary school and convent, Putnam Pike, Rte. No. 44. $400,000. Plans deposit $200. Joseph M. Mosher Assoc., Inc., 77 Washington St., Providence, archt. CD 4/8.

Mass., Westfield — HOUSING FOR THE ELDERLY — BA 11/27—City Housing Auth., 50-unit housing for the elderly, SA 667-1. $550,000. Plans deposit $50. Caolo Assocs., 57 Pearl St., Springfield, archts.-engrs. CD 8/7.

BUILDINGS—SLC

Mass., South Hadley—PLANT—Nonotuck Mfg. Co., Water St., Holyoke, soon lets contract manufacturing plant, Canal St. $500,000. Alderman & MacNeish, 594 Riverdale St., West Springfield, archts.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., Augusta,
Farrin Bros. & Smith, Brighton, Me., CA $127,282 (12 bidders), grav. road 1.316 mi. Vassalboro-China, FASP No. S-0210(11) Contr. No. 1, Kennebec Co. Bids Nov. 4. CD 10/26.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Bids opened 11/3,
B. & H. Constr. Co., Inc., Madbrook Rd., North Brookfield, Mass., LB $130,999, est. $125,000, hy. work, roads in Brimfield and Holland. CD 10/21.

† A. T. R. Constr. Co., Connell Hy., Newport, R. I., LB $139,199, est. $116,000, road repairs, Prudence Island, U. S. Naval Magazine and Net Depot, NBy 28632, Spec NBy 28632/59, NEWPORT, R. I. Dist. P. Wks. Office, 1st Naval Dist., 495 Summer St., Boston, Mass. Bids Nov. 3. CD 10/13.

BUILDINGS—LB & CA

Henry M. Soule Co., Inc., 421 Walcott St., Pawtucket, R. I., CA Approx. $400,000, SUPERMARKET, Water St., FITCHBURG, MASS. First National Stores, Inc., 5 Middlesex Ave., Somerville, Mass. Bids Oct. 19. CD 10/13.

Wayside Builders, Inc., Edgell Rd., Framingham, Mass., Separate Contracts, Approx. $600,000, 30 HOUSES, off Edgell Rd., FRAMINGHAM, MASS.

▲ Tornabene Bros. Co., 170 Needham St., Newton Upper Falls, Mass., CA Approx. $1,500,000, (12 bidders), ENGINEERING BLDG., Campus, MEDFORD, MASS. Tufts University, Medford, Mass. Bids Oct. 29. CD 10/6.

▲ Vappi & Co., Inc., 240 Sidney St., Cambridge, Mass., CA Total Est. $4,000,000, DEPARTMENT STORE-SHOPPING CENTER, Newburyport Turnpike, SAUGUS, MASS. Sears-Roebuck & Co., 201 Brookline Ave., Boston, Mass. The Architects Collaborative, 63 Brattle St., Cambridge, Mass., archts. CD 11/12/58.

A. R. Green & Son, Inc., 19 St., James St., Springfield, Mass., CA $820,500, Naismith BASKETBALL HALL of FAME, SPRINGFIELD, MASS. Springfield College, 263 Alden St., Springfield, Mass. CD 11/4, under LB.

A. M. Gregorio & Son, 14 Druit Hill Rd., Wakefield, Mass., Separate Contracts, Approx. $875,000, 35 HOUSES, off Greenwood St., Greenwood Section, WAKEFIELD, MASS.

Town, P. Wks. Dpt., 402 Essex St., Weymouth, Mass., rejected bids Oct. 20, HIGHWAY BLDG. and GARAGE, WEYMOUTH, MASS. Harry Gulesian, 131 State St., Boston, Mass., archt. LB $535,530. Will re-advertise. CD 10/27, under LB.

Granger Contg. Co., Inc., 306 Main St., Worcester, Mass., LB $516,498, MEN'S DORMITORY, WORCESTER, MASS. Assumption College, 670 W. Boylston St., Worcester, Mass. O. E. Nault & Sons, 340 Main St., Worcester, Mass., archts. CD 10/22, under LB.

Franchi Constr. Co., Inc., 216 Webster St., Newton, Mass., CA $472,199, est. $450,000, YOUTH CENTER and CONVENT, North Ave. BURLINGTON, VT. St. Marks R. C. Church, 1251 North Ave., Burlington, Vt. Bids Oct. 22. CD 10/14.

H. P. Cummings Constr. Co., High St., Woodsville, N. H., CA $894,000, STUDENT UNION and DINING HALL, WINOOSKI, VT. St. Michael's College, 56 College Parkway, Winooski Park, Vt. Bids Oct. 29. CD 11/5, under LB.

W. J. Barney Corp., 101 Park Ave., New York, N. Y., CA $150,000, styrene-butadine latex PLANT addn., ALLYNS POINT, CONN. Dow Chemical Co., Allyns Point, (P.O. Norwich, Conn.) W. J. Barney Corp., 101 Park Ave., New York, N. Y., archts.-engrs. CD 10/27.

Powers Realty Co., Jennings Rd., Fairfield, Conn., Owner Builds, $609,000, 29 HOUSES, "High Ridge Park" Samp Mortar Lake, FAIRFIELD, CONN.

† Hartwell Co., Inc., 33 Sutton Ave., East Providence, R. I., LB $582,000, replace existing BOILERS and auxiliaries, GROTON, CONN. U. S. Naval Submarine Base, Box 400, New London, Conn. CD 9/25.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Md., Hyattsville—BA 11/23—Washington Suburban Sanitary Comn., Hamilton St., Contr. 2487-W, water main in River Rd. to east of South Glen Rd., Bethesda. Plans deposit $5.

Pa., Phila.—PLAYGROUNDS—BA 11/23—Dpt. Procurement, City Hall Annex, Bid 5085, chain link fabric, gates, posts, rails and all appurtenant parts at American Legion Playgruond, Torresdale and Evereaux St., Mt. Airy Playground, Germantown Ave. and Sedgwick St., Plumbo Playground, 9th and Bainbridge Sts., Roosevelt Playground, Levick and Walker Sts., Samuel Recreation Center, Tioga and Gual Sts., for Recreation Dpt., 424 City Hall Annex.

† D. C., Wash.—CLUB MODIFICATION—BA 11/24—Base Procurement Office, Bolling Air Force Base, Zone 25, modification NCO Club Bldg. No. T-416, Bolling Air Force Base, Job IFB-49-604-60-33. CD 2/5/58.

† Md., Andrews Air Force Base—APRON OPERATIONAL, etc.—BA 11/24—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., apron operational and washrack, John H. Towers Field, Camp Springs, ENG-49-080-60-19(21). Whitman Requardt, 1304 St. Paul St., Baltimore, Md. archts. CD 10/28.

Pa., Phila.—BA 11/24—Dpt. Procurement, City Hall Annex, Bid 2431, intercepting chamber and appurtenant work, 67th St. East of Phila., Baltimore and Washington R.R. R/W; Bid 2432, rehabilitation intercepting chamber in R/W former Westmoreland St. at former Delaware Ave.; Bid 2433, chain link fence, appurtenances at Torresdale Filter Plant; Bid 2435, electrical work, Belmont Filter Plant; Bid 2436, reconditioning admin. bldg., Queen Lane Filter Plant; Bid 2437, sump pump and sampling sys. at Belmont Filter Plant; Bid 2438, furnishing, installing steam heating sys. and appurtenant work for admin. bldg. of Queen Lane Filter Plant; Bid 2440, furnishing, installing plumbing and appurtenant work for Frankford Grit Chamber Bldg.; Bid 2441, alterations, reconditioning plumbing and appurtenant work in admin. bldg. Queen Lane Filter Plant, for Water Dpt. Plans deposit $5 Bids 2436, 2437, 2438, 2489, 2440, 2441; plans deposit $10 Bid 2435. CD 11/8/58.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	Mississippi to Rockies
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

HEAVY CONSTRUCTION—BA

Md., Andrews Air Force Base—OPERATIONAL MISSION TRAINING BLDG., etc.—BA 12/2—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., operational mission training bldg., John H. Towers Field, Camp Springs, ENG-49-080-60-16(17). Williqoos, Straubel, Panero & Knoerle, 1145 19th St. N.W., Wash., D. C., archts. CD 10/30.

† Md., Andrews Air Force Base—OPERATIONS BLDG.—BA 12/2—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., operations bldg. John H. Towers Field, Camp Springs, ENG-59-080-60-15(16). Williqoos, Straubel, Panero & Knoerle, 1145 19th St. N.W., Wash., D. C., archts. CD 10/30.

Pa., Phila.—BA 12/15—Dpt. Procurement, City Hall Annex, Bid 2430, main relief sewer 22nd St. from Berks St. to point 20 ft. N. of N.H.L. of Dauphin St., for Water Dpt. CD 11/8/58.

BUILDINGS—BA

Pa., Phila.—LIBRARY—BA 11/23—Dpt. Procurement, City Hall Annex, Bid 4171, general construction; Bid 4172, plumbing; Bid 4173, heating and air-conditioning; Bid 4174, electrical, Lovett Library, 6945 Germantown Ave., for Dpt. P. Property. Plans deposit $5. CD 5/12/58.

Md., Cheltenham—CLASSROOM—BA 11/24—State Dpt. P. Imprvts., 301 W. Preston St., Baltimore, Zone 1, brick, steel, concrete classroom bldg., Cheltenham Boys' Village. $400,000. Plans deposit $40. Bonnett & Brandt, 701 Cathedral St., Baltimore, Zone 1, archts. CD 10/27.

N. J., Alpine—SCHOOL—BA 12/1—Bd. Educ. Borough of Alpine, elementary school. $400,000. Feilgraff, Ballou & Daly, 577 Teaneck Rd., Ridgefield Park, archts. CD 1/16.

▲ Pa., McClellandtown—SCHOOL—BA 12/3—Pa. Public School Bldg. Auth., 101 S. 25th St., Harrisburg, secondary school addn. for German Twp. School Dist., (Proj. 858-654). $1,000,000. Plans deposit $50. W. F. Schardt, 1001 South Ave., Pittsburgh, Zone 21, archts. CD 10/6/58.

▲ N. Y., East Meadow—CHILDREN'S COURT, etc.—BA 12/15—Bd. Supervs. Nassau County, Old County Court, Mineola, children's court and probation dept. bldg. $1,750,000. Jagow & Heidelberger, 650 Fulton Ave., Hempstead, N. Y., archts. CD 1/2/58.

▲ Pa., Brookville — SCHOOL — BA 12/15 — Pa. Public School Bldg. Auth., 101 S. 25th St., Harrisburg, secondary school for Brookville Area Joint School Bd., (Proj. 812-648). $2,500,000. Plans deposit $50. Hunter, Campbell & Rea, 3601 5th Ave., Altoona, archts. CD 5/5/58.

HEAVY CONSTRUCTION—LB & CA

▲ Nassau Constr. Corp., Inc., 69-54 51 Ave., Woodside, N. Y., LB $1,386,921 (7 bidders), Contr. 6A, general contract South Beach imprvs., incl. promenade, playground, parking fields, etc., Slater Blvd. to Dartmouth Ave., Richmond Boro, NEW YORK. Comr. of Parks, Arsenal Bldg., Central Park, 64th St. and 5th Ave., New York 21, N. Y. Bids Nov. 5. CD 10/19; Euclid Constr. Co., 101 Park Ave., New York 17, N. Y., LB $878,000 (8 bidders), Contr. 7A, general constr. bathhouse, comfort stations, concessions bldg., shelter, Iona St. to Fort Wadsworth, Richmond Boro (NEW YORK).

▲ George M. Brewster & Sons, Inc., 275 W. Fort Lee Bd., Bogota, N. J., CA $1,123,950, relocating Runway 13-31, fill, sand drains and surcharge, LaGuardia Airport, Contr. LGA-310.005, JACKSON HEIGHTS, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Oct. 27. CD 10/30, under LB.

Barry Contg. Corp., Edgewater Rd. and Spofford Ave., New York 59, N. Y., LB $102,460 (4 bidders) No. 3, curbing, constr. sidewalks, paving with b. conc., etc. Fairfield Ave. from W. 230th St. to W. 231st St.; No. 4, grading westerly side, paving with b. conc. Palisade Ave. from Independence Ave. to Kappock St., etc., NEW YORK, N. Y. President Bronx Boro, Rm. 207, Bronx County Bldg., 851 Grand Concourse, New York 51, N. Y. Bids Oct. 29. CD 10/21.

The Arthur A. Johnson Corp. and Peter Kiewit Sons Co., 347 Madison Ave., New York 17, N. Y., LB $4,526,250 (11 bidders), const. part rapid transit railroad, section 1, Rte. 112, third section Chrystie Street subway, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., Rm. 1310, 370 Jay St., Brooklyn 1, N. Y. Bids Nov. 6. CD 10/1.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 11/4,
Barrett Bituminous Co., Mount Holly, N. J., LB $268,662 (4 bidders), wid'n., resurf. Parkway Ave. from

Olden Ave. Extension to Parkside Ave. in Trenton and Ewing Twp., Mercer Co. CD 10/16.

NEW JERSEY—State Hy. Dpt., 1035 Parkway Ave., Trenton, Bids opened 11/5,

Michael J. Stavola, Inc., Chapel Hill Rd., Red Bank, N. J., LB $457,829 (3 bidders), widn., resurf. 1.877 mi. Rte. 35, Sects. 6A and 4A, through portions of Eatontown, Shrewsbury and Red Bank, Fed. Proj. No. F-26(8), Monmouth Co. CD 10/16.

All States Assocs., Broad St. and Alward Rd., Clifton, N. J., LB $159,165, est. $160,000 (10 bidders), drains, Ernston Rd., SAYREVILLE, N. J. Borough, Borough Hall, Sayreville, N. J. H. G. Moselowitz, 7 Spring St., New Brunswick, N. J., engr.

† **American Dredging Co.**, 12 S. 12th St., Phila. 7, Pa. CA $546,550, dredging Delaware River Section D-14, Phila. Harbor, Phila., IFB ENG-36-109-60-7, PENNSYLVANIA. U. S. Eng., P.O. Box 8629, Phila., Pa. CD 9/19/58.

▲ **Ernest Renda Contg. Co., Inc.**, R.D. 2, Bound Brook, N. J., CA $1,272,672, Contr. 5, sanitary sewerage sys., KING OF PRUSSIA, PA. Upper Merican Twp. Auth., King of Prussia, Pa. Bids Sept. 1. CD 9/21, under LB;

McClain Constr. Co., Inc., 200 S. 13th St., Phila., Pa., CA $899,900, pumping station, sewage treatment plant (King of Prussia, Pa.)

▲† **F. D. Rich, Inc.**, 550 Summer St., Stamford, Conn., LB $1,563,012 (18 bidders), Base Bid 1, hangar, maintenance, organization (CRT-2), ENG-49-090-60-8 (8). CD 10/9; LB $1,563,012, Base Bid 2, hangar, maintenance, organization (SAM-2), ENG-49-080-60-7 (7), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. CD 10/6;

Arthur Venneri, 1906 K St. N.W., Wash., D. C., LB $3,304,120, Base Bid 3, combined CRT-2 and SAM-2 (Andrews Air Force Base, Md.).

▲ **Diamond Constr. Co.**, Ocean Steamship Terminal, P.O. Box 647, Savannah, Ga., LB $2,284,133 (15 bidders), steel girder span substructure, West Highway Bridge, over Potomac River vicinity of 14 St.; LB $2,335,535 (14 bidders), concrete box girder span sub-structure, West Highway Bridge, over Potomac River vicinity of 14 St., WASH., D. C. D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., Wash., D. C. Bids Nov. 6. CD 11/5;

Terry Contg. Co., 1111 34 Ave., Long Island City, N. Y., LB $2,642,531 (2 bidders), concrete box girder span superstructure for West Highway Bridge over Potomac River, vicinity 14 St. (Wash., D. C.);

Blount Bros., 79 Commerce St., Montgomery, Ala., LB $2,365,521 (12 bidders), steel girder span superstructure for West Highway Bridge over Potomac River, vicinity of 14 St. (Wash., D. C.).

† **James L. Partello**, 2510 50 Ave., Tuxedo, Md., LB $196,972 (7 bidders), boathouse for Water Sports Center, located in "The Mole" in Rock Creek and Potomac Parkway, WASH., D. C. National Park Service, Dpt. Interior, 19 and C Sts., Wash. 25, D. C. Bids Nov. 3. CD 10/20.

BUILDINGS—LB & CA

Linden Manor Homes, c/o Harmol Corp., Frank St., Lindenhurst, N. Y., Owner Builds, $420,000 (addnl. section) 30 HOUSES, Daniel St. and N. Niagara Ave., LINDENHURST, N. Y.

▲ **Joseph P. Blitz, Inc.**, 545 Madison Ave., New York 22, N. Y., CA $7,927,000, general contract (A) Martin Van Buren HOUSES (Proj. No. NYC-30), Trinity Ave., E. 161St., E. 163rd St.; (B) Forest South HOUSES (Proj. No. NY-5-31), Tinton Ave., E. 161 St., E. 163rd St., Bronx Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Sept. 15. Grand total $9,775,424. CD 9/17, under LB.;

Heating Maintenance Corp., 220 E. 138th St., New York 51, N. Y., CA $674,000, heating, Martin Van Buren Houses and Forest South Houses (New York, N. Y.);

John G. Heilman Co., 507 E. 76th St., New York 21, N. Y., CA $575,424, electrical work, Martin Van Buren Houses and Forest South Houses (New York, N. Y.);

Far Plumbing Co., 2018 Crotona Parkway, New York 60, N. Y., CA $599,000, plumbing, Forest South Houses only (New York, N. Y.).

Greenacres Homes, c/o Ackerman & Harris, Jericho Turnpike, Commack, N. Y., Owner Builds, $480,000, 40 HOUSES, Sunrise Hy. between Broadway and Lincoln Ave., SAYVILLE, N. Y.

Seatauket Gardens Homes, c/o Irving Gottesman, 855 East Walnut St., Long Beach, N. Y., Owner Builds, $450,000, 30 HOUSES, North Country Rd. north of Jericho Turnpike, SEATAUKET, N. Y.

▲ **C. Potoksky**, 3-35 27th St., Fair Lawn, N. J., Owner Builds, $1,000,000, 50 HOUSES, section Ann St., BLOOMINGDALE, N. J. Bernard Hersh, 12-45 River Rd., Fair Lawn, N. J., archt.

R. A. Prendergast & Son, 3010 Sunset Ave., Atlantic City, N. J., CA $622,138, general contract Regional JUNIOR-SENIOR HIGH SCHOOL and well, CAPE MAY, N. J. Lower Cape May Co. School Dist., West Cape May, N. J. CD 9/30, under LB.

Bender Realty Co., c/o Klumas & Gais, 613 St. George Ave., Roselle, N. J., Owner Builds, $700,000, 25 HOUSES, Carolina St., CRANFORD, N. J.

▲ **Dan McCarron & Sons**, 27 E. Scott Place, Elizabeth, N. J., CA $1,247,658, 5 story HOSPITAL addn., ELIZABETH, N. J. Alexian Bros. Hospital, 635 E. Jersey St., Elizabeth, N. J. Jos. A. Allan, 412 Morris Ave., Elizabeth, N. J., archt. in charge constr. CD 8/23/57.

▲ **Fairfield Manor**, Hamilton Square, N. J., Separate Contracts, $7,000,000, RESIDENTIAL DEVELOPMENT (600 homes), Abbotts Ave., etc, HAMILTON SQUARE, (Trenton P. O.), N. J. Franklyn B. Spiezle, 11 N. Willow St., Trenton, N. J., archt.

Honey Hill Manor, c/o Geo. Philobosian, 420 Deerwood Rd., Palisades Park, N. J., Owner Builds, $400,000, 15 HOUSES, South Prospect Ave., HILLSDALE, N. J.

▲ **Tech Built Homes**, 302 Maple St., Lakehurst, N. J., Owner Builds, $3,500,000, 200 HOMES, Rte. 70, LAKEHURST, N. J. Gerald J. Oakley, 35 Liberty Rd., Bergenfield, N. J., archt. J. C. Fellows, Main St., Toms River, N. J., engr.

▲ **John J. Donnelly, Inc.**, 223 Princeton Rd., Audubon, N. J., CA Approx. $1,000,000, SCHOOL, Charleston Rd., LEVITTOWN, N. J. Parish Corpus Christi, Charleston Rd., Levittown, N. J. CD 7/21.

▲ **Roland Aristone, Inc.**, 6225 Cress Blvd., Pennsauken, N. J., CA $2,000,000, DISCOUNT MART MERCHANDISE BLDG., LEVITTOWN, N. J. Buyers World, Inc., 134 Broadway, Camden, N. J. William Dean Faint, 1915 Browning Rd., Pennsauken, N. J., archt.

▲ **Matthew Gill**, St. Hy. 35, Middletown, N. J., Owner Builds, $1,000,000, 30 HOUSES on Gillcrest Farm, off Rte. 35, MIDDLETOWN, N. J.

▲ **John W. Ryan Constr. Co., Inc.**, 11 W. 42 St., New York, N. Y., CA Est. $7,000,000, Millburn SHOPPING CENTER, incl. 3 story department store, 2 story restaurant, truck tunnel, MILLBURN, N. J. Prudential Insurance Co., 763 Broad St., Newark, N. J. Skidmore, Owings & Merrill, 425 Park Ave., New York, N. Y., archts. CD 3/5/58.

Milton Hantman, 69A Meadowbrook Place, Maplewood, N. J., Owner Builds, $500,000, 18 HOUSES, Ridgeview Ave., NEW PROVIDENCE, N. J.

Al Reeder, c/o James MacRae, archt., 935 Caldwell Ave., Union, N. J., Owner Builds, $400,000, 64-unit garden APARTMENT, Mill Rd., Edison, NIXON, N. J.

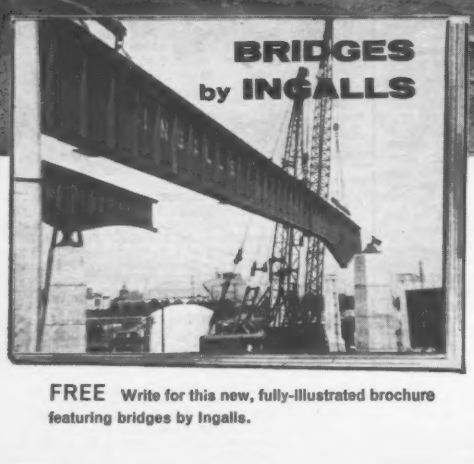
P.R.F., Inc. (Paul R. Fine), 356 Jersey Ave., Elizabeth, N. J., Owner Builds, $800,000, 24 HOUSES, Mountain Ave., Murray Hill, NEW PROVIDENCE, N. J.

▲ **Roy Lipson**, 712 Orange Court, River Vale, N. J., Owner Builds, $3,000,000, 90 HOUSES, Doriskill Court, RIVER VALE, (Westwood P. O.), N. J.

Rose Valley Realty Corp., Media, Pa., Separate Contracts, $600,000, 20 home RESIDENTIAL DEVELOPMENT, MEDIA, PA.

John P. Donovan, Inc., 225 S. 15th St., Phila., Pa., LB $562,700, DINING HALL, PHILA., PA. St. Joseph's College, 54th St. and City Line, Phila., Pa. Henry D. Dagit & Sons, 1329 Race St., Phila., Pa.,

16-CARLOAD "GIRDER EXPRESS" FR



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archts. Thomas J. McCormick, Suburban Station Bldg., Phila., Pa., engr.

Boyd H. Kline, Bloomsburg, Pa., CA **$522,419**, est. $500,000, general constr. Shamokin State HOSPITAL addns., Imprvs., SHAMOKIN, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Sept. 30. CD 10/5, under LB.

Richard Extner, Southampton, Pa., Separate Contracts, **$750,000**, 46 home RESIDENTIAL DEVELOPMENT, Gravel Hill Rd., etc., SOUTHAMPTON, PA.

Kirby & McGuire Inc., 2518 Greenmount Ave., Baltimore 18, Md., LB **$517,000**, est. $550,000 (13 bidders), brick, concrete, steel, block Eastern District POLICE STATION, 1700 Edison Hy., BALTIMORE, MD. City, Bureau Bldg. Constr., 410 Municipal Bldg., Baltimore 2, Md. Bids Nov 4. CD 10/21.

Technical Engineers, Inc., 2008 Cedar Circle Dr., Baltimore 8, Md., LB **$514,450** (2 bidders), rehabilitation Bethesda ELEMENTARY SCHOOL, Bethesda, ROCKVILLE, MD. Montgomery County Bd. Educ., Rockville, Md. Bids Nov. 5. CD 10/20.

Martin Brothers, 1609 Connecticut Ave. N.W., Wash., D. C., CA Est. **$951,000**, SHOPPING CENTER, New Hampshire Ave. and East West Hy., TAKOMA PARK, MD. Greenbelt Consumers, Inc., 10501 Rhode Island Ave., Beltsville, Md. Hugh Johnson & Assoc., 2000 P St. N.W., Wash., D. C., archts. Awarded Nov. 3. CD 6/14/57.

▲ **The Costanza Co.**, 3625 Wilkens Ave., Baltimore 29, Md., CA **$3,497,610**, on alternates, brick, steel, concrete, block Security SENIOR HIGH SCHOOL, Woodlawn, TOWSON, MD. Baltimore County Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Oct. 13. CD 10/16, under LB.

Lacchi Constr. Co., 2023 Maryland Ave., Baltimore 18, Md., CA **$713,500**, 1 story, brick, concrete, steel Fort Garrison ELEMENTARY SCHOOL, near Baltimore, TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson, Md. Bids Oct. 21. CD 10/27, under LB

SOUTH

HEAVY CONSTRUCTION—BA

S. C., Greenwood—BA 11/24—City, City Hall, Contr. 2, 22,573 lin. ft. 16 and 20 in. water distr. lines. $200,000. Plans deposit $25. J. Heart Coleman Co., City Hall, engr. CD 10/29.

S. C., Spartanburg—BA 11/24—City, City Hall, sanitation sewers, 1,160 lin. ft. 10 in. and 68,940 lin. ft. 8 in. vitr. clay pipe, 70 lin. ft. 10 in. and 1,400 lin. ft. 8 in. c.i. pipe; 47,500 lin. ft. replacing pavement. Plans deposit $15. Harwood Beebe Co., E. Main St., engr. CD 11/9.

† **Va., Williamsburg**—ROOF REPLACEMENT—BA 11/24—Dist. P. Wks. Office, 5th Naval Dist., Room 307, Bldg. N-26, U.S. Naval Base, Norfolk, replacement of roof, Naval Supply Center (Cheatham Annex), NBy 24487, Spec. 24487/59. Under $10,000.

† **La., Lake Charles**—BASE RAILROADS—BA 11/25—Base Procurement Office, Chennault Air Force Base, repairs to base railroads, Chennault Air Force Base. IFB 16-60-60-14B. CD 8/25/55.

S. C., Clover—BA 11/25—Town, Town Hall, sewage treatment plant. $117,000. Plans deposit $30. B. P. Barber & Assocs., 1418 Maion St., Columbia, engrs. CD 3/12.

† **Ga., Savannah**—ROAD IMPRVS.—BA 11/30—Base Procurement Office, Hunter Air Force Base, road and access to Bldg. No. 8640, Hunter Air Force Base, Job IFB-09-602-60-15. CD 9/18/57.

▲ **Ala., Scottsboro**—BA 12/1—City, City Hall, water treatment plant, raw water pumping station and water mains. $1,000,000. Plans deposit $47.50. Harry Hendon & Assocs., 10 Office Park Circle, Birmingham, engrs. CD 5/6.

† **Fla., Tampa**—ILS RELOCATION—BA 12/2—Base Procurement Office, MacDill Air Force Base, relacation ILS Glide Slope Antennae, MacDill Air Force Base, Inv. 08-602-60-14. CD 9/24, under LB

† **Mississippi and Tennessee**—PARK ROADS, etc.—BA 12/2—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington 4, Va., Proj. 351, grading, grav. base, box type bridges 10.213 mi. from Utica-Regantown Rd. to Big Bayou Pierre, Natchez Trace Parkway, Claiborne Co. CD 9/21.

† **Kentucky and Ohio**—BA 12/3—U. S. Eng., P.O. Box 2127, 237 Fourth Ave., Huntington, W. Va., clearing between Greenup Locks and Dam and Lock and Dam No. 29, Ohio River, CIVENG-46-022-60-27. CD 10/23.

† **Va., Langley Air Force Base**—AIRCRAFT WEAPONS CALIBRATION SHELTER, etc.—BA 12/3—U. S. Eng., foot of Front St., Norfolk, aircraft weapons callbration shelter (open facility) and 1 story masonry block bldg., ENG-44-110-60-7. CD 10/29.

Va., Newport News—BA 12/7—City, 118 Main St. (DPW) sanitary sewer and pumping station, Harpersville Rd. Plans deposit $10. CD 2/8/45.

† **Fla., Orlando**—BUILDING ALTERATIONS—BA 12/8—U. S. Eng., 575 Riverside Ave., Jacksonville, alterations to Bldgs. 524 and 525, McCoy Air Force Base, Job IFB ENG-08-123-60-30B. CD 9/24/58.

† **Louisiana**—BA 12/8—U.S. Eng., foot of Prytania St., New Orleans, Zone 9, channel enlargement and realignment Mile 25.3 to Mile 31.5 Amite River and Tributaries, Ascension and Livingston Parishes, CIVENG-16-047-60-83. CD 9/29.

† **S. C., Charleston**—BRICKWORK RENEWAL—BA 12/9—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, U.S. Naval Base, renewal brickwork, Boiler 13, Bldg. 32, Charleston Naval Shipyard, U.S. Naval Base, NBy 27603, Spec. 27603/59. $25,000-$100,000. CD 9/10/58.

▲† **Miss., Meridian**—RUNWAY, etc.—BA 12/10—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U.S. Naval Base, Charleston, S. C., East Runway, connecting taxiway and airfield lighting, U.S. Naval Auxiliary Air Station, NBy-25484, Spec. No. 25484/59. Over $1,000,000. CD 9/8/58.

▲† **Alabama and Georgia**—BA 12/17—U. S. Eng., 2301 Grant St., Mobile, Ala., high-lift navigation lock Walter F. George Dam, Chattahoochee River, vicinity of Fort Gaines, CIVENG-01-076-60-9. CD 10/23.

BUILDINGS—BA

N. C., Raleigh—HEATING PLANT—BA 11/24—Bd. P. Bldgs. & Grounds, 117 Agriculture Bldg., heating plant, Downtown Blvd. $850,000. Extended date. William C. Olsen & Assocs., 5 Exchange Pl., engrs. CD 11/9.

N. C., Graham—SCHOOL—BA 12/1—Alamance Co. Bd. Educ., Court Square, Southern High School. $800,000. Plans deposit $50. McMinn, Norfleet & Wicker, 2828 Lawndale Dr., Greensboro, archts. CD 7/2.

S. C., Hartsville—PLANT—BA 12/1—Sonoco Products Co., Hartsville, plant addn., incl. chemical laboratory. $125,000. McCall & Leach, 1808 Carolina Ave., archts. CD 12/27/55.

† **Tenn., Oak Ridge** — RELATIVISTIC ISOCHRONOUS CYCLOTRON FACILITY BLDG.—BA 12/3—Atomic Energy Comn., P.O. Box E, relativistic isochronous cyclotron facility bldg., 6000 Oak Ridge National Laboratory area, Inv. No. 401-60-8A. CD 10/30.

† **S. C., Charleston**—POST OFFICE—BA 12/8—General Services Admin., Regional Office, 50 7th St. N.E., Atlanta, Ga., remodel post office. $500,000. Plans deposit $40. Simons, Lapham & Mitchell, 17 Broad St., archts. CD 11/10/58.

HEAVY CONSTRUCTION—SLC

▲ **North Carolina**—Yadkin, Inc., subsidiary of Aluminum Co. of America, Alcoa Bldg., Pittsburgh 19, Pa., soon lets contract hydro electric plant, 1,000 ft. long concrete dam, three 14,000 kw units Badin, $5,000,000. CD 3/26/56.

HEAVY CONSTRUCTION—LB & CA

Rogers & McGrath, Inc., 1221 Kenilworth Ave. N.E., Wash., D. C., CA **$521,254**, central sewage treatment plant, D.C. Correctional Institutions, LORTON, VA. D C. Govt., Bldg. Constr., Dpt. Sanitary Engineering, 499 Pa. Ave. N.W., Wash., D. C. Bids Sept. 10. CD 9/17, under LB.

(Continued on page 150)

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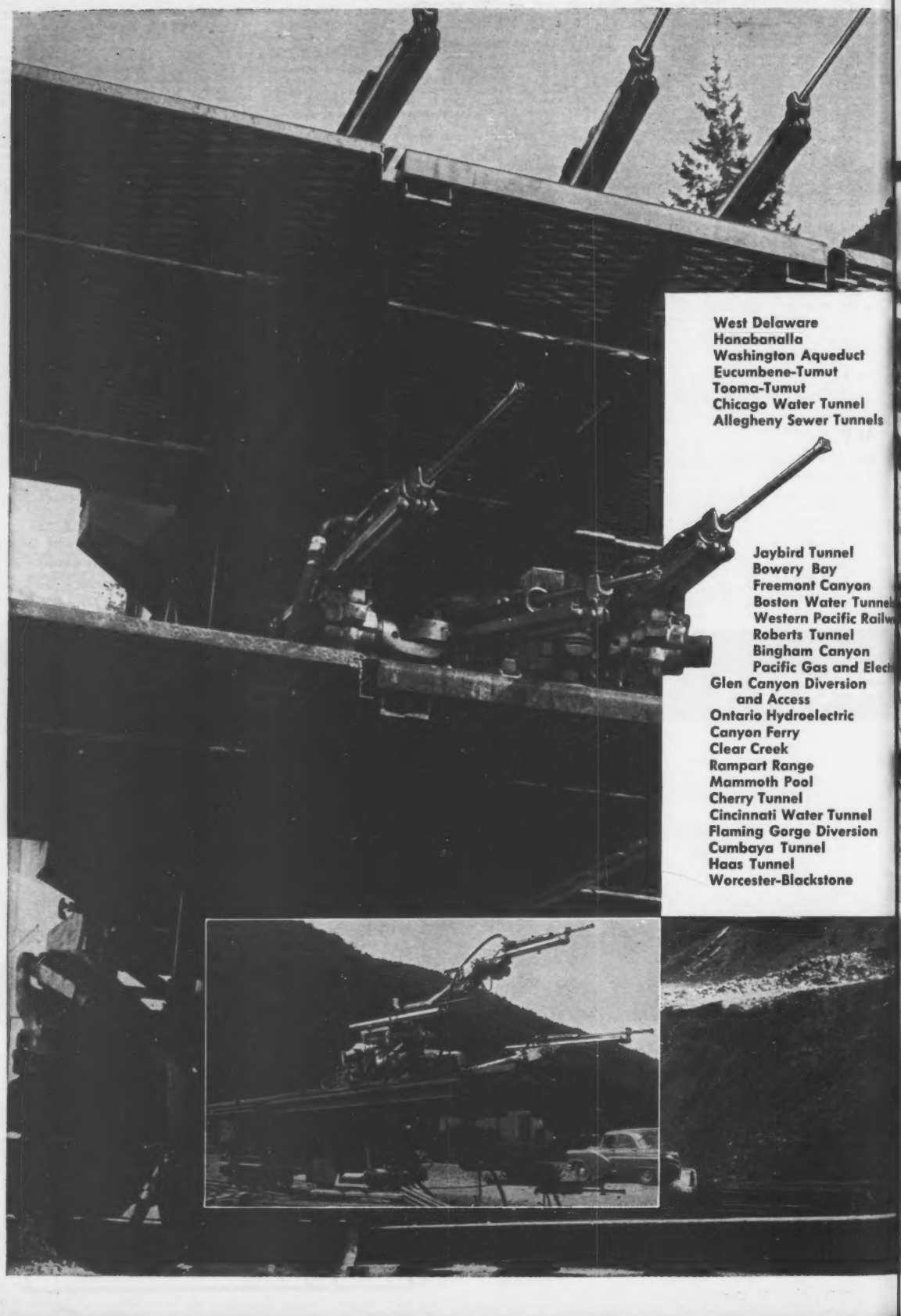

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Allegheny Sewer Tunnels

Jaybird Tunnel
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Freemont Canyon
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GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Ave., Toronto 16, Ontario

(Continued from page 147)

Ferguson Corp., 2401 Jefferson Ave. Extension, Newport News, Va., CA $157,492, water pumping station, Lake Meade Dam and Reservoir, Contr. "B" NORFOLK, VA. Hampton Roads Sanitation Dist. Comn., 236 E. Plume St., Norfolk, Va. R. Kenneth Weeks, 6165 E. Sewells Point Rd., Norfolk, Va., engr. Awarded Oct. 15.

▲ **NORTH CAROLINA**—State Hy. Comn., Raleigh,

N. C.—Thompson Arthur Paving Co., 300 Bentrow Rd., Greensboro, N. C., CA $629,115, CABC, bit. conc. base, b. conc. surf. 5.78 mi. surf. on relocation of US 220 from point south of NC 704 north to point on US 220 2 miles southwest of Stoneville, Proj. 8.15904 F-286(7) Rockingham Co.;

N. C.—Graham & Simpson, Inc., Mt. Airy, N. C., CA $1,418,853, stab. aggreg. base, b. conc. binder and surf. 10.68 mi. surf. on relocation of US 421 from point approx. 900 ft. west of Yadkin River, east to proposed Interstate 40 approx. 2 mi. west of Winston-Salem, Proj. 8.17393 F-173(8) Forsyth and Yadkins Counties. Bids Nov. 3, awarded Nov. 6. CD 11/6, under LB.

SOUTH CAROLINA—State Hy. Dpt., Hotel Jefferson, Columbia,

Jos. W. Barnwell, Jr., P.O. Box 5301, Five Points, Columbia, S. C., CA $857,022, 1,901 ft. 4 in. rein.-con. prestressed concrete and structural steel bridge over Great Pee Dee River and two 1,020 ft. rein.-con. prestressed concrete, structural steel bridges over Great Pee Dee River Swamp, U. S. Rte. 1 N.E. of Cheraw, S. C. Docket No. 1335.270, F.A. Proj. No. F-321 (4). Chesterfield and Marlboro Counties. Bids Oct. 20. CD 10/27, under LB.

▲ **SOUTH CAROLINA**—State Hy. Dpt., Hotel Columbia, Columbia,

Claussen Contg. Corp., P. O. Box 6153, North Augusta, S. C., CA $1,036,580, grade, drainage 5.412 mi. Int. Rte 26 S. C. Dockets Nos. 8.361 and 10.460, FA. Proj. I-26-4 (10) Berkeley and Charleston Counties. Bids Aug. 18. CD 8/25, under LB.

Espy Paving & Constr. Co., 108 E. Bay St., Savannah, Ga., CA $559,897, option 1-a, concrete pipe, 36,000 lin. ft. 24 in. water transmission lines between Lake Greenwood and City of Greenwood, GREENWOOD, S. C. City, City Hall, Greenwood, S. C. CD 10/21, under LB.

Brown Paving Co., P. O. Box 484, Lexington, N. C., CA $249,916, airport grading, paving, Crescent Beach, MYRTLE BEACH, S. C. City, City Hall, Myrtle Beach, S. C. Bids Oct. 28. CD 11/4, under LB.

Great Lakes Piping Co., 583 Dutch Valley Rd., N.E., Atlanta, Ga., LB $437,500, underground steam distr. system, State Hospital, MILLEDGEVILLE, GA. Georgia State Dpt. P. Health, State Office Bldg., Atlanta, Ga. Bids Nov. 3, CD 10/21.

▲ **FLORIDA**—State Road Dpt., Holland Bldg., Tallahassee,

Fla.—Duval Engineering & Contr. Co., Box 1588, Jacksonville, Fla., CA $815,668, extra-heavy grading and embankment 4-lane limerock base limerock overbuild b. conc. with binder course 5.206 mi. SR 401 Fed. Aid Access Proj. No. R-AD 6 (3) Job No. 70080-3203, Brevard Co.;

Fla.—Ballenger Paving Co. Inc., Paris Station, Greenville, S. C., CA $1,634,083, grading, 4-lane divided limerock base b. conc. course and binder course limerock base shoulders, 6.117 mi. SR 400 FAI Proj. No. I-4-1 (19) 56, Job No. 16320-3403 Polk Co. Bids Aug. 25, awarded Nov. 2, CD 9/1, under LB.

▲ **FLORIDA**—State Road Dpt., Rm. 288, Holland Bldg., Tallahassee,

F & C Industries, Inc. and **George E. Bunnell, Inc.**, Ojus, Fla., CA $3,764,907, extra heavy grading, 6 and 8 lane divided 9 in. cement concrete pavement limerock base with b. conc. surf. course, limerock base with Type 1-A surf. tr., etc. 0.574 mi. SR 9 Proj. I-195-1 (13) 5 FAI Proj. No. I-95-1 (14) 5 Job No. 87280-3413, Dade Co., Bids Aug. 25, awarded Nov. 3, CD 8/28, under LB.

▲† **Robert E. Green, D/B/A Green Constr. Co.**, P. O. Box 65, Oaktown, Ind., LB $1,220,234, (23 bidders), Canal 24, Section 2, Central and Southern Florida Flood Control Project, CIVENG-08-123-60-14, FLORIDA. U. S. Eng., P. O. Box 4970, Jacksonville 1, Fla. Bids Nov. 3. CD 10/6.

† **Reynolds & Smith, Inc.**, Box 428, Moore Haven, Fla., LB $786,960, (19 bidders), imprv. Canal 41, Section 2, (Harney Pond Canal) Central and Southern Florida Flood Project, CIVENG-09-123-60-11, FLORIDA. U. S. Eng., P. O. Box 4970, Jacksonville 1, Fla. Bids Nov. 3. CD 9/22.

▲ **James H. Craggs Constr. Co.**, P. O. Box 22, Gainesville, Fla., LB $1,046,987, grading, paving, Arlington Expressway, JACKSONVILLE, FLA. Jacksonville Expressway Auth., 1022 Miami Rd., Jacksonville, Fla., Bids Nov. 5. CD 10/28.

T. L. James & Co., Box 8, Kenner, La., and Box 531, Ruston, La., CA $181,000, alternate, asphalt paving various streets, GRETNA, LA. Jefferson Parish Council, Court House, Gretna, La. Bids Sept. 15. CD 10/12, under LB.

East Tennessee Natural Gas Co., Kingston Pike, Knoxville, Tenn., Owner Builds, $150,000, natural gas lines exten., Greene Co., TENNESSEE. CD 1/5.

BUILDINGS—LB & CA

▲ **Eugene Simpson & Brother**, 300 Montgomery St., Alexandria, Va., CA $3,074,850, combined bid, incl. equipment, Phase 1, 150-bed HOSPITAL, Seminary Rd., ALEXANDRIA, VA. Alexandria Hospital, 709 Duke St., Arlington, Va. Bids Oct. 26. CD 11/2, under LB.

▲ **Glassman Constr. Co., Inc.**, 717 14th St. N.W., Wash., D. C., CA $1,020,600, Washington Irving Intermediate SCHOOL, West Springfield, CA $1,013,500, J. G. Whittier SCHOOL, Broyhill Park, FAIRFAX, VA. Fairfax County School Bd., Fairfax, Va. Awarded Nov. 5. CD 5/11.

▲ **Huntley & Cleckley**, 37 Fox Hill Rd., Hampton, Va., CA $1,600,000, 121 HOUSE SUBDIVISION, Azalea Gardens, HAMPTON, VA. Drucker & Falk, 131 26th St., Newport News, Va. Awarded Nov. 5.

O. E. Ziebe, 2209 Dickens Rd., Richmond, Va. CA $415,000, SALESROOMS and OFFICE addn., RICHMOND, VA. Diggs & Beadles Seed Co., Inc., 6306 W. Broad St., Richmond, Va. Alan McCullough, 4 E. Main St., Richmond, Va., archt. Awarded Nov. 4.

▲ **Rust Engineering Co.**, 930 Fort Duquesne Blvd., Pittsburgh 22, Pa., CA Est. $1,600,000, SOAKING PITS for melt shop addn., HUNTINGTON, W. VA. Connors Steel Div., H. K. Porter Co., Inc., 5002 Powell Ave. S., Birmingham, Ala.

Security Homes, Inc., 2512 Netherwood Dr., Greensboro, N. C., Day Labor, $450,000, 40 RESIDENCES, Guilford Hills Subdivision, GREENSBORO, N. C.

R. V. Gamble, 1809 Spring Gardens St., Greensboro, N. C., Day Labor, $500,000, 30 RESIDENCES, Green Valley Subdivision, GREENSBORO, N. C.

▲ **Gamble, Simpson, Tittle & King**, 1809 Spring Garden St., Greensboro, N. C., Day Labor, $1,500,000, 100 RESIDENCES, Falley Dale Estates Subdivision, GUILFORD COLLEGE (Br. Greensboro), N. C.

▲ **John R. Taylor Co.**, 2910 E. Bessemer Ave., Greensboro, N. C., Day Labor, $1,000,000, 100 RESIDENCES, Morningside Manor Subdivision, WINSTON-SALEM, N. C.

▲ **Daniel Constr. Co.**, 429 N. Main St., Greenville, S. C., CA Est. $20,000,000, 2,000,000 sq. ft. FIBERGLAS MFG. PLANT, AIKEN, S. C. Owens-Corning Fiberglas Corp., 601 Madison Ave., Toledo, O. Bechtel Corp., 485 Lexington Ave., New York, N. Y., engrs.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C., CA Est. $850,000, MANUFACTURING PLANT, BARNWELL, S. C. Shuron Optical Co., Div. Textron Inc., 1407 Broadway, New York, N. Y.

Daniel Constr. Co., 429 N. Main St., Greenville, S. C., CA Est. $500,000, OFFICE, GREENVILLE, S. C. Stone Mfg. Co., U. S. By-pass 29, Greenville, S. C.

Charles J. Craig Constr. Co., 1610 Westminster Dr., Columbia, S. C., LB $556,637, CONSOLIDATED HIGH SCHOOL, WINNSBORO, S. C. Fairfield County Bd. Educ., Courthouse, Winnsboro, S. C. Bids Nov. 5. CD 10/14.

Sullivan & Compton, 202 E. Bay St., Savannah, Ga., CA $650,000, 60 RESIDENCES, No. 2 section Skidaway Terrace Subdivision, SAVANNAH, GA. William Lattimore, 202 E. Bay St., Savannah, Ga.

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RAIL LIGHTING

For greater beauty, safety, and efficiency on bridges, overpasses, elevated highways and highway ramps

A fluorescent luminaire combining lighting fixture, bridge rail, and wiring channel all within the rail itself is announced by General Electric. The unit is especially designed for use on applications where mounting and installation pose a problem.

Working with Michael Flynn Manufacturing Company, fabricators of the aluminum rail, G-E engineers developed this unique 12-foot unit, which houses two 42-inch lamps. Built into the rail are all components of the fixture—reflector, socket, lamp, shatter-resistant acrylic window, ballast and wiring channel. The top section of the rail opens to allow easy access to the luminaire and ballast.

These are the benefits with this new concept in lighting:

- Big savings on installation and wiring—simply string out wire, open rail cover, and lay wire in channel.
- Uniformity of light along the roadway.
- Elimination of glare.

H. A. Lott, Inc., P. O. Box 25005, Houston, Tex., LB **$866,000**, 100 unit HOUSING PROJECTS GA 160-1 and GA 160-2, WARNER ROBINS, GA. Warner Robins Housing Auth., Warner Robins, Ga. Bids Nov. 4. CD 10/19.

▲ **William A. Berbusse, Jr., Inc.**, 322 Royal Palm Way, Palm Beach, Fla., LB **$2,241,000**, (12 bidders), Cedars of Lebanon HOSPITAL, NW 14 St. and 15 St., MIAMI, FLA. Cedars of Lebanon Hospital, c/o Smith & Korach, archts., 1630 Ave., Miami Beach, Fla. Bids Nov. 5. CD 10/27.

M. R. Harrison Constr. Corp., 1000 NW 54 St., Miami, Fla., CA **$248,360**, 1 story, 121 x 221 CB-S WAREHOUSE and OFFICE, 1951 Delaware Parkway, MIAMI, FLA. Dade Reagents, 1851 Delaware Parkway, Miami, Fla. Robert J. Boerema, 7209 SW 58 Ct. S., Miami, Fla., archt. Brown-Sells & Assocs., 1429 Ponce De-Leon Blvd., Coral Gables, Fla., engrs.

▲ **Miami Garden Corp.**, c/o Anderson & Bergamaschi, archts., 124 Almeria Ave., Coral Gables, Fla., Owner Builds, Approx. **$1,000,000**, SHOPPING CENTER, SE Corner 183 St. and 47 Ave., MIAMI, FLA. CD 10/21.

Applewhite Remodeling Co., Pascagoula, Miss., CA Est. **$800,000**, 1 story, 50,000 sq. ft. concrete blocks, steel, etc., seven-unit SHOPPING CENTER, Hy. 90, PASCAGOULA, MISS. Deep South Investment Co., Pascagoula, Miss.

▲ **Fluor Corp. Ltd.**, 2500 S. Atlantic Blvd., Los Angeles 22, Calif., CA **$4,000,000**, 450 million standard cu. ft. per day natural gasoline PLANT, Vermillion Parish near ABBEVILLE, LA. Goliad Corp., Tex. National Bank Bldg., Houston, Tex. and Union Oil Co. of Calif., 461 S. Boylston St., Los Angeles, Calif. Mid-Continent Div., Fluor Corp., 3137 Old Spanish Trail, Houston, Tex., engrs.

Abraham Constr. Co., Box 2870, Baton Rouge, La., CA **$930,000**, 3 story and attic, tile stucco Thos. D. Boyd HALL addn. and complete interior alterations, BATON ROUGE, LA. Louisiana State University & Agricultural & Mechanical College, Baton Rouge, La. Bids Oct. 29, awarded Nov. 2. CD 11/5, under LB.

Perrilliat-Rickey Constr. Co., Inc., Box 13128, New Orleans, La., LB **$401,235**, Base Bid, OFFICE, CROWLEY, LA. Southern Bell Telephone & Telegraph Co., 1215 Prytania St., New Orleans, La. Warren-Knight & Davis, Protective Life Bldg., Birmingham, Ala., archts.

▲† **Babcock & Wilcox Co.**, Chandler Bldg., Atlanta, Ga., CA **$14,804,610**, BOILER to be used with 600,000 kw. generating unit at Paradise Steam Plant, PARADISE, KY. Tennessee Valley Authority, New Sprankle Bldg., Knoxville, Tenn. Awarded Nov. 4. CD 10/5, under LB.

▲† **Combustion Engineering**, 911 W. Main St., Chattanooga, Tenn., CA **$12,059,950**, BOILER for 500,000 kw. generating unit, Knoxville, TENNESSEE. Tennessee Valley Auth., New Sprankles Bldg., Knoxville, Tenn.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **Ill., Great Lakes**—COAL CONVEYOR, etc.—BA 11/24—Dist. P. Wks. Office, Ninth Naval Dist., Bldg. 1-A, coal conveyor feed water treatment, fly ash disposal sys. for Bldg. 58-H, Naval Hospital, Under $25,000. CD 9/16/57, under Public Buildings.

† **Mich., Selfridge Air Force Base**—OPERATIONAL MISSION TRAINING BLDG.—BA 11/24—U. S. Eng., 1101 Washington Blvd., Detroit, Zone 26, operational mission training bldg., ENG-20-064-60-21. CD 3/12/58.

Ill., Lake Zurick—BA 11/30—Village, Village Hall, WW and sewerage, sanitary sewers, lift stations, mains. $150,000. Consoer, Townsend & Assocs., 360 E. Grand Ave., Chicago, Zone 11, engrs.

Wis., Milwaukee—BA 12/3—City, City Hall, coagulation and sedimentation and recovery basin equipment for Howard Ave. Plant, $790,000. Plans deposit $25. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. E. A. Schmidt, c/o owner, city engr. CD 5/12/58.

BUILDINGS—BA

▲ **Ill., Chicago**—HOUSING—BA 12/1—Chicago Housing Authority, 608 S. Dearborn St., Zone 5, Proj. 231, 456 unit Robert Brooks Housing extension, 13th St. and Blue Island Ave. $5,244,000. Mielke & Smith, 53 W. Jackson Blvd., Chicago, Zone 4, archts. CD 11/29/55.

▲ **Ind., Indianapolis**—SCHOOL—BA 12/8—School Bd., 150 N. Meridian St., high school, E. 46th and Arlington, northeast-side area, $4,800,000. McGuire & Shook, Compton, Richey & Assoc., 1 S.T.A. Center, archts. CD 10/8.

† **O., Wilmington**—N.C.O. OPEN MESS—BA 12/15—U.S. Eng., 237 4th Ave., Huntington, W. Va., N.C.O. open mess, Clinton County Air Force Base, ENG-46-022-60-6. CD 11/4.

HEAVY CONSTRUCTION—LB & CA

W. L. Harper Co., 2910 Highland, Norwood, O., CA Approx. $850,000 (3 bidders), concrete paving, sewer-water lines for 325 homes off Colerain Park; sewerage disposal plant for 325 homes off Colerain Park, CINCINNATI, O. Murphy Bros., Inc., 7945 Hamilton Mt. Healthy, O. CD 8/28.

Richardson Constr. Co., 17 W. Southern Ave., Covington, Ky., CA **$131,319**, wid'n., concrete paving Sutton Ave. from Salem Park to Glade Ave., CINCINNATI, O. Bd. Comrs. Hamilton Co., Courthouse, Cincinnati, O. Bids Oct. 27. Awarded Nov. 4. CD 10/13.

▲ **Muncie Constr. Co.**, 201½ E. Adams, Muncie, Ind., CA Est. **$1,800,000**, 46 mi., 138,000 volt transmission line, h-frame constr., double-circuit crossing of Illinois River, between Merordosia power plant on Illinois River to substation near Quincy, ILLINOIS. Central Illinois Public Service Co., 607 E. Adams, Springfield, Ill.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

H. H. Mass Constr. Co., Main St., Algonquin, Ill. CA **$630,000**, 2 bridges over East Channel of Rock River, FA 194, Winnebago Co. Bids Oct. 23, awarded Nov. 5. CD 10/27, under LB.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield, rejected bids Oct. 23, resurf. 2.78 mi. FA 36, Quincy, Adams Co. LB **$143,008**. CD 10/27, under LB.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldgs., Springfield,

Ill.—**J. D. Barter & E. T. Simonds Co.**, 215 S. Jackson, Harrisburg, Ill., CA **$701,142**, grading 1.4 mi. FAI-57, north of Dongola, Union Co.;

Ill.—**Robert A. Black, Inc.**, 13912 S. Halsted, Chicago, Ill., CA **$2,341,117**, paving, ramps 3.37 mi. Interstate US 45 and FAI 70 northeast of Effingham, Effingham Co.;

Ill.—**Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill. CA **$1,188,164**, outfall sewer pump house, 1.69 mi. Ogden Ave., SBI 18, Chicago, Cook Co. Grand total $4,320,423. Bids Oct. 23, awarded Nov. 5. CD 10/27, under LB.

▲ **S. A. Healy Co.**, Box 11, McCook, Ill., LB **$2,184,850** est. $2,795,000 (12 bidders). Contract 80.82-59-31, auxiliary outlet sewer, Leamington Ave. system, Cont. 1-D, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Oct. 28. CD 2/13.

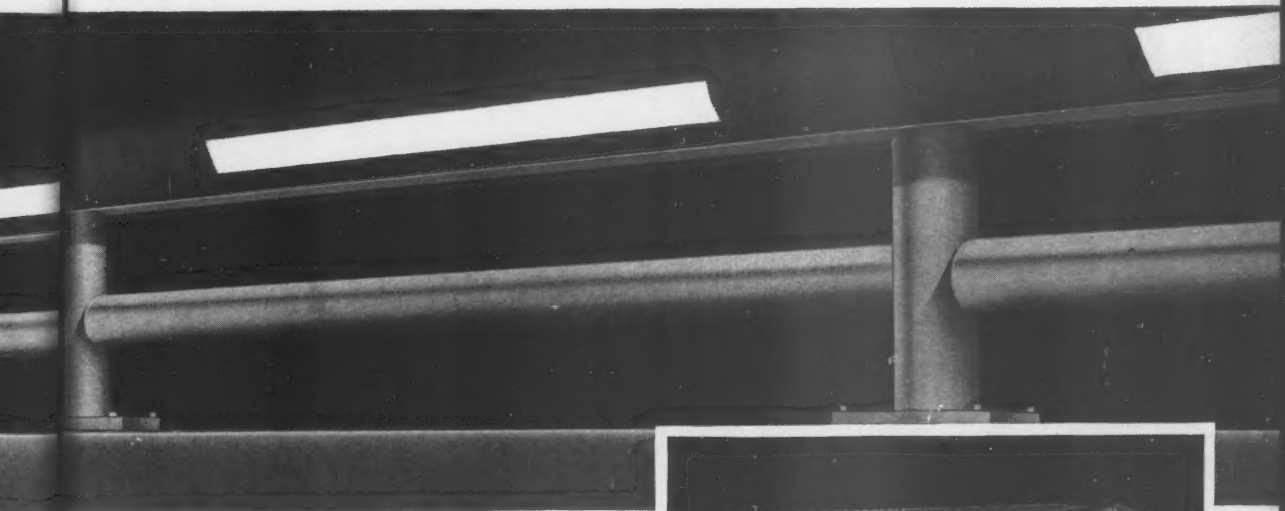
WISCONSIN—State Hy. Comm., State Office Bldg., Madison,

cancelled bids to have been opened Oct. 27, grade and subbase 1.331 mi. West County Line-Monomonie Rd., St. Hy. 29, Contr. 1, Proj. T 072 (6), Dunn Co. CD 10/8.

▲ **MICHIGAN**—State Hy. Dpt., Mason Bldg., Lansing. Bids opened 11/4,

Mich.—**Holloway Constr. Co.**, 29350 Joy Rd., Livonia, Mich., LB **$2,115,715**, 6.7 mi. expressway and interchange at Polk Rd. on section from existing US 27

(Continued on page 154)



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- Added beauty—units blend in with rail.

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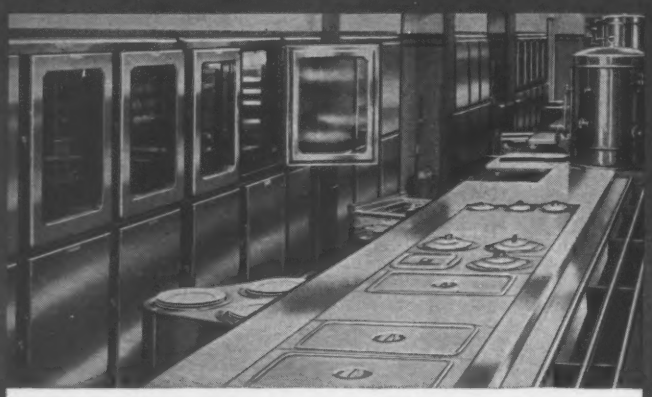
GENERAL ELECTRIC



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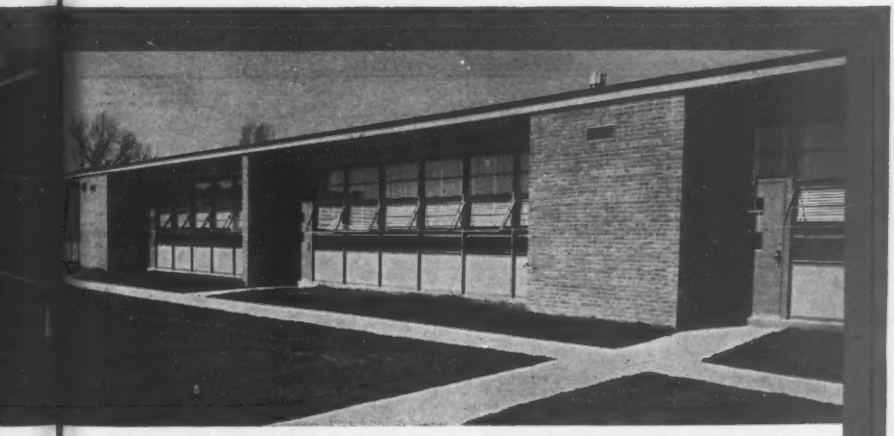

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(Continued from page 151)

(Washington Rd.) at Ithaca north to Lincoln Rd., Gratiot Co.;

Mich.—**L. W. Edison,** 3134 Midland Dr. S.E., Grand Rapids, Mich., LB **$1,345,962,** ½ mi. dual roadways from end of existing dual expressway near Whitmore Lake north to M 36 and 4.5 single lane constr. from M 36 north to Chesapeake & Ohio grade sep. just south US 16 near Brighton incl. bridge at Huron River and interchange at M36, Livingston Co.;

Mich.—**Blue Water Excavating,** 1821 Elmwood, Port Huron, Mich. and **Frank Strausberg,** 2403 Wilkins St., Saginaw, Mich., LB **$381,805,** 11.8 mi. grading, drainage structures and 22 ft. bit. aggreg. surf. M 30 from Midland County Line north to M 61; LB **$448,981,** 14.3 mi. similar work on M 30 north from M 61, Gladwin Co. CD 10/21.

BUILDINGS—LB & CA

Knowlton Constr. Co., 1133 W. Columbus, Bellefontaine, O., LB **$729,700,** (11 bidders), SENIOR HIGH SCHOOL, CINCINNATI, O. Forest Hills School Dist., 7537 Beechmont, Cincinnati, O. Bids Oct. 29. CD 9/25.

▲ **Murphy Bros., Inc.,** 7945 Hamilton, Mt. Healthy, O. Own Forces, **$5,250,000,** 325 one and 1½ story, bsmnt., brick HOMES, new street off Colerain Park, CINCINNATI, O. CD 8/28.

J. & E. Warm Co., 2335 Florence, Cincinnati, O. CA **$200,000,** 1 story, bsmnt, 12,000 sq. ft. brick, rein.-con. WAREHOUSE-SERVICE BLDG., Diesel, marine engines Woodlawn, CINCINNATI, O. Tri-State Engine Services, Inc., 10520 Chester Rd., Woodlawn, O. Ayers & Graf, Linton St., Cincinnati, O., engrs. Awarded Nov. 4.

Marion Contg. Co., 25 S. Main St., Dayton, O. LB **$716,300,** (8 bidders), JUNIOR HIGH SCHOOL, MIDDLETOWN, O. Bd. Educ., Manchester Rd. Bids Oct. 27. CD 10/7.

▲ **Koppers Co.,** 1493 Koppers Bldg., Pittsburgh, Pa., CA 87 COKE OVENS, EAST CHICAGO, IND. Youngstown Sheet & Tube Co., Stambaugh Bldg., Youngstown, O.
Mesta Machine Co., P.O. Box 1466, Pittsburgh, Pa., CA, 52 in. six stand tandem COLD REDUCING MILL, in No. 2 Tin Mill, Indiana Harbor Works (East Chicago, Ind.).

▲ **Inland Constr. Co.,** 6132 Oakton, Morton Grove, Ill. CA Est. **$1,000,000,** 170,000 sq. ft. FACTORY, OFFICE, Northwest Hy. near Cuba Rd., BARRINGTON, ILL. Chicago Aerial Industries, Inc., 1980 N. Hawthorne, Melrose Park, Ill. Schiller & Frank, 23 E. Jackson, Chicago 4, Ill., archts. Awarded Oct. 28. CD 3/12/58.

Pepper Constr. Co., 308 W. Washington St., Chicago 6, Ill., CA **$800,000,** 2 story OFFICE, CHICAGO, ILL. Victor Adding Machine Co., 3900 N. Rockwell St., Chicago, Ill. Olsen & Urbain, 5 S. Wabash Ave., Chicago 3, Ill., archts. Awarded Oct. 24.

Sherman Olson, Inc., 219 N. Kilpatrick Ave., Chicago 44, Ill., CA **$700,000,** PRINTING MACHINERY MFG. PLANT, OFFICE, CICERO, ILL. Miehle Goss Dexter, Inc., 5601 W. 31st St., Cicero, Ill. Olsen & Urbain, 5 S. Wabash Ave., Chicago 3, Ill., archts. Awarded Nov. 1.

FisherStoune, Inc., Citizens Bldg., Decatur, Ill. CA Est. **$300,000,** AUTOMOBILE and TRUCK SERVICE and SALES, DECATUR, ILL. Gregory Ford Co., E. Pershing Rd., Decatur, Ill. CD 3/25.

▲† **Kay-Cee Constr. Co.,** 8115 North Ridgeway Ave., Skokie, Ill., CA **$1,396,000,** CANTEEN and LIBRARY BLDG., Veterans Administration Hospital, BATTLE CREEK, MICH. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Oct. 27. CD 10/29, under LB.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

† **Mont., Glasgow**—GYM AND SHOP—BA 12/1—U. S. Eng., City-County Airport, Walla Walla, Wash., gym and shop modifications, Glasgow Air Force Base, ENG-45-164-60-12. CD 3/12/58.

† **Tex., Corpus Christi**—STATION BLDGS.—BA 12/1—Officer in Charge Constr., Naval Air Advanced Training Command, Bldg. 141, Naval Air Station, repair various station bldgs., Naval Air Station, NBy 28669, Spec. 28669/59. $100,000-$250,000.

† **Ark., Little Rock**—LIGHTING, APPROACH—BA 12/2—U. S. Eng., P.O. Box 867, Little Rock, lighting, approach, Little Rock Air Force Base, Item No. 00-001 (136-661), ENG-03-050-60-19. CD 10/26, under LB.

† **Oklahoma**—BA 12/2—U.S. Eng., Box 61, Tulsa, roads, Eufaula Dam. ENG-34-066-60-34. CD 9/28.

▲ **Tex., Houston**—BULK MATERIAL HANDLING PLANT, etc.—BA 12/2—Harris County, Houston Ship Channel, Navigation Dist., Port Comn., 1519 Capitol Ave., unit bulk material handling plant and channel dredging Greens Bayou from Ship Channel to face of dock, $1,233,000. Walter P. Moore, 2 Pinedale St., engr. CD 8/28/58.

† **N. M., Albuquerque**—SAGE FACILITIES—BA 12/10—U.S. Eng., P.O. Box 1538, sage facilities, Kirtland Air Force Base, ENG-29-005-60-38B. CD 11/4.

▲† **Arkansas**—BA 12/10—U.S. Eng., P.O. Box 867, Little Rock, design, manufacture, test and deliver two 161 kv., 1,200 amp. 5,000 MVA oil circuit breakers, complete with accessories and spare parts, Bull Shoals Dam and Reservoir, White River, CIVENG-03-050-60-31. $1,000,000-$3,000,000. CD 11/13/51.

† **Tex., Lackland Air Force Base**—WATER SUPPLY—BA 12/16—U.S. Eng., Box 1229, Galveston, water supply, IFB ENG-41-243-60-11B. CD 11/5.

† **Colorado**—BA 12/17—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, 2 main control boards for Upper and Lower Molina powerplants, Collbran Project, Spec. DS 5257. CD 9/19/44.

BUILDINGS—BA

▲ **Neb., Omaha**—CHURCH, etc.—BA 12/1—Christ the King Church, 901 S. 88th St., church and rectory, 86th and Shamrock Rd. $1,000,000. Leo A. Daly, 8600 Indian Hills Dr., archt.

Minn., Hastings—HOSPITAL — BA 12/3 — Sisters of Charity of Our Lady Mother of Mercy, part 1 story, bsmnt. and part 3 story, bsmnt. Salve Regina Hospital addn. $900,000. Plans deposit $75. Bettenburg, Townsend, Stolte & Comb, 1437 Marshall Ave., St Paul, archts. CD 10/19.

Wyo., Laramie—STUDENT HEALTH SERVICE and COLLEGE of NURSING—BA 12/4—University of Wyoming, Campus, 2 story, bsmnt., 49x182 ft. student health service and college of nursing, $750,000. Sam C. Hutchings, Jr., 1902 Thomas Ave., Cheyenne, archt. CD 8/28.

Okla., Oklahoma City—SCHOOL—BA 12/17—Bd. Educ., 900 N. Klein St., Thomas Jefferson Junior High School, SW 67th and Blackwelder Sts. $800,000. Noftsger & Lawrence, 2756 NW 23rd St., archts. CD 11/20.

BUILDINGS—SLC

▲ **Tex., Houston**—DISTRIBUTION CENTER—Armour & Co., 401 N. Wabash Ave., P.O. Box 9222, Chicago, Ill., soon lets contract meat packing processing and distr. center, Job No. 5195. $2,000,000. Wyatt C. Hedrick, 5201 Fannin St., archt.-engr. CD 10/27.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., State Hy. Bldg., St. Paul, Zone 1, Bids opened 11/6,

Antler, Walker Corp., 1482 Arlington Ave., St. Paul, Minn., LB **$131,633,** (10 bidders), Bridge No. 9659 and Bridge No. 9660, 1.2 mi. south of Zumbrota, Goodhue Co. CD 10/21.

▲ **MINNESOTA**—State Hy. Dpt., State Hy. Bldg., St. Paul, Zone 1, Bids opened 11/6,

Minn.—W. Hodgman & Sons, Inc., 921 North St., Fairmont, Minn., LB **$96,260,** (10 bidders), plant mixed bit. surf. and grav. shoulders 11.2 mi. at and near McGregor, Aitkin Co.;

Minn.—Duininck Bros., Olivia, Minn., LB **$256,939,** (12 bidders), grade and grav. surf. 7.9 mi. between 2.5 mi. east of Lake Park and Detroit Lakes, Becker Co.;

Minn.—Johnson Bros. Highway Constructors, 6301 Wayzata Blvd., Minneapolis, Minn., LB **$908,227,** (10 bidders), grade, base and plant mixed bit. surf. 2 mi. in and near New Ulm, Brown and Nicollet Counties;

Minn.—J. Dieseth Co., 7 Norby Bldg., Fergus Falls, Minn., LB **$298 843,** (19 bidders), grade, sand-grav. sub-base, grav. base and road-mixed bit. base 8 mi. between south line of Hubbard Co. and Park Rapids, Hubbard Co. CD 10/21.

C. G. Fraser, Rochester, Minn., LB **$167,840,** (3 bidders), grading, sanitary and storm sewer, water main and service connections, ROCHESTER, MINN. City, City Hall, Rochester, Minn. Bids No. 2. CD 10/22.

IOWA—State Hy. Comn., Ames,
received no bids Oct. 20, grading 0.471 mi., I-29-4 (2)64N, Harrison and Pottawattamie Counties. CD 10/8.

MISSOURI—State Hy. Dpt., Jefferson City,
cancelled bids to have been opened Oct. 27, 62 ft., 91 ft., 58 ft., cont. box girder, Sta. 945 plus 42; 2-58 ft., 48 ft., 89 ft., cont. box girders, Sta. 991 plus 30, both in St. Louis City; 83 ft., 125 ft., 89 ft., cont. plate girder spans, Sta. 143 plus 55; 89 ft., 128 ft., 89 ft., cont. plate girder spans, Sta. 2 plus 12; 45 ft., 60 ft., 56 ft., 34 ft., cont. void slab spans, Sta. 177 plus 38; twin 7 cont. box girder spans, Sta. 149 plus 18; 1-466 ft. cont. and counterfort type retaining wall 18th and Askew; 1-92 ft. cont. retaining wall, Sta. 4 plus 31, all foregoing in Jackson Co. CD 10/7.

MISSOURI—State Hy. Dpt., Jefferson City,
cancelled bids to have been opened Oct. 27, Mark Twain Expressway North and South Distr. Road Structure 0.041 mi.; graded earth and pavt. 1.32 mi.; graded earth and pavt. 1.634 mi., all foregoing in St. Louis City; Southeast Freeway over Terminal R.R. in Kansas City 0.057 mi.; 227 ft. cont. and counterfort retaining wall along Indiana Ave. at 17th St.; graded earth and 2 concrete pavts. 0.904 mi., all foregoing in Jackson Co. CD 10/7.

† **Eugene Duhr & Co.,** P.O. Box 48, Columbia, Ill., LB **$453,525,** est. $537,539, (6 bidders), stone bank protection, Mississippi River, Miles 24.3, 31.0 and 48.5 above Ohio River, CIVENG-23-065-60-19, MISSOURI. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids Nov. 5. CD 10/2.

ARKANSAS—State Hy. Dpt., State Capitol, Little Rock, Bids opened 11/4,

Ark.—Peter Kiewit Sons Co., 4036 Coronado Place, Oklahoma City, Okla., LB **$225,253,** surf. 8.635 mi. Hy. 43 from Newton Co. Line northeast to existing pavement. Boone Co.;

Ark.—Forsgren Bros., 3023 N. 23 St., Fort Smith, Ark., LB **$124,975,** grade, drainage structure and place gravel base on Hy. 113 for 2.994 mi. from approx. 1.5 mi. southeast of Oppello, Conway and Perry Counties;

Ark.—Southeast Constr. Co., 2119 W. 2, Pine Bluff, Ark., LB **$234,338,** surf. 9.705 mi. Hy. 124 from US Hy. 65 to Quitman, Van Buren and Cleburne Counties. CD 10/26.

▲† **Pioneer Electric Ltd.,** 1 Rockwood St., Winnipeg 9, Manitoba, Canada, LB **$1,135,732,** (10 bidders), furnishing main power transformers, near Pierre, Oahe Reservoir Proj., ENG-25-066-60-20, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Nov. 3. CD 9/22.

(Continued on page 158)

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Full torque capacity for the entire life of the friction material! The TC non-adjustable, spring loaded, dry-plate clutch compensates for fading pressure of expanding springs. The toggle linkage maintains full pressure ... smooth, chatter-free engagement.

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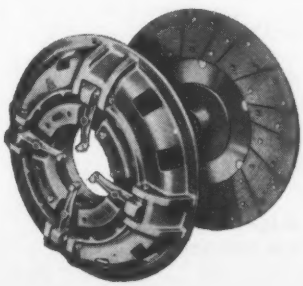

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3 top contractors tell how **Transite Sewer Pipe** helped keep installation costs low on the Allegheny County Sanitary Authority sewage project (Allegheny County, Pa.)

"Transite saved us considerable labor especially when we were working in 18- to 28-foot trenches . . ."

says W. R. Davies, W. R. Davies Company
Pittsburgh, Pennsylvania

"For the Allegheny County Sanitary Authority we used Transite Pipe for Sanitary Sewers because it is faster to install, lighter, and more readily handled than the other materials specified as alternates. Transite saved us considerable labor especially when we were working in 18- to 28-foot trenches.

"Another part of our 'Authority' contract included the installation of 5,300 feet of Domestic Water and Fire lines at the 150 MGD capacity Pittsburgh Sewage Treatment Plant. We used Transite Pressure Pipe for this entire job. Our costs were low because it is faster to install."

W. R. Davies Co. installation.

"In a remarkably short time, our men installed two miles of Transite . . . even though they worked below the adjacent river level . . . and between railroad tracks and one of the most congested highways in the county . . ."

says P. A. Benintend, Ben Construction Company
Pittsburgh, Pennsylvania

"For the Allegheny County Sanitary Authority Contract, Transite's ease of installation . . . sure coupling . . . and 13-foot lengths saved money for us in over-all installation. In a remarkably short time, our men installed two miles of Transite Sewer Pipe and force mains, even though they worked below the adjacent river level to install the force main—and between railroad tracks and one of the most congested highways in the county to install the sewer. Speed of installation plus prompt delivery enabled us to finish the job well before the required completion date."

"We installed Transite Sewer Pipe in some of the toughest locations on this job."

says D. C. Rothey, Project Manager
Harrison Construction Company
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"In our stretch down along the Allegheny River we were constantly 5 to 14 feet below normal pool stage level. Final inspection revealed no infiltration."

Transite Sewer Pipe installations on the $100-million Allegheny County Sanitary Authority Project. Shown here is part of Harrison Construction Co. contract.

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(Cotinued from page 154)

Steelman Constr. Co., 2800 N.E. 24th St., Oklahoma City 4, Okla., LB **$94,765,** est. $100,000, sanitary main sewer extensions, BLACKWELL, OKLA. City, City Hall, Blackwell, Okla. CD 5/7.

† **Bushman Constr. Co.,** 5th and Felix Sts., St. Joseph, Mo., LB **$375,808,** (4 bidders), clearing, earthwork, concrete lining and structures for rehabilitation of H Lateral, Station 1 plus 10 to 276 plus 96, Lower Rio Grande Rehabilitation Proj., Mercedes, Hidalgo Co., Spec. DC 5245, TEXAS. Bureau Reclamation, Dpt. Interior, Weslaco, Tex. Bids Nov. 5. CD 10/5.

Deep East Texas Electric Co-operative, San Augustine, Tex., Owner Builds, **$90,000,** 40 mi. rural pole lines, San Augustine area. San Augustine Co., (Texas 64-AC-San Augustine), TEXAS. CD 8/21.

† **Oliver & Armon Constr. Co.,** New Boston, Tex., LB **$110,243,** est. $140,045, (8 bidders), flood water retard structures with earthfill embankments, Sites 15, 16 and 17, Nim Ned Creek, Lawn, Taylor Co., SCS 14-TX-60, TEXAS. Soil Conservation Service, Dpt. Agriculture, 1st National Bank Bldg., P.O. Box 417, Temple, Tex. Bids Oct. 29. CD 10/3.

West-Tex Telephone Co-operative, Stanton, Tex., Owner Builds, **$125,000,** telephone pole lines, Borden Co., Stanton area, TEXAS. CD 8/29/58.

City, City Hall, Burkburnett, Tex., Owner Builds, **$65,000,** water collecting lines imprvs., BURKBURNETT, TEX. CD 9/8.

▲ **Steele Constr. Co., Inc.,** 2505 Galveston St., Houston, Tex., LB **$4,646,883,** (10 bidders), 68 mi. (1) two 24 in. c.i. water lines (2) six 42 in. concrete pipe, sanitary sewer lines, appurtenances, (3) storm sewers and open drainage, 18- to 60-in. concrete pipe (4) sewage plant expan., HOUSTON, TEX. City, City Hall, Houston, Tex. Bids Nov. 4. CD 10/28.

† **Necco Electrical Contractors, Inc.,** 1550 1st Ave. S., Seattle, Wash., LB **$153,425,** est. $197,042, (8 bidders), approach lighting sys., Malmstrom Air Force Base, Inv. 60-37, GREAT FALLS, MONT. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Nov. 3. CD 10/28.

BUILDINGS—LB & CA

▲ **G. E. Carlstrom Constr. Co.,** Mankato, Minn., CA **$1,677,143,** general contract three 600-bed DORMITORY WINGS and FOOD SERVICE FACILITIES addn., Mankato State College, MANKATO, MINN. State College Bldg., 41 Sherburne Ave., St. Paul, Minn. Bids Oct. 22. CD 10/30. under LB.

▲ **Adolfson & Peterson,** 2817 Bryant Ave. S., Minneapolis, Minn., LB **$1,427,000,** (8 bidders), combined bid general contract, two ELEMENTARY SCHOOLS, New Hope, and ELEMENTARY SCHOOL addn., Brooklyn Center, ROBBINSDALE, MINN. Bd. Educ. Independent School Dist. No. 281, Robbinsdale, Minn. Bids Nov. 3. CD 10/23;
A. Newman Heating & Plumbing, 1608 Como Ave., St. Paul, Minn., LB **$404,550,** combined bid, mechanical work for two elementary schools, New Hope and elementary school addn., Brooklyn Center (Robbinsdale, Minn.).

General Development Co., Rochester, Minn., LB **$494,000,** (4 bidders), combined bid, general contract, TWIN SCHOOLS each 1 story, 137x217 ft., ROCHESTER, MINN. Bd. Educ. Special School Dist. No. 4, Rochester, Minn. Bids Nov. 3. CD 10/28.

D. L. Witcher, Inc., 400 2nd Ave. S., Minneapolis, Minn., CA **$635,915,** (5 bidders), general contract 2 and 3 story SENIOR HIGH SCHOOL addns., SOUTH ST. PAUL, MINN. Bd. Educ. Special School Dist. No. 6, South St. Paul, Minn. Bids Nov. 4. CD 10/14.

C. H. Peterson Constr. Co., 4020 Minnetonka Blvd., Minneapolis, Minn., LB **$602,700,** (13 bidders), general contract HOSPITAL, STILLWATER, MINN. Lakeview Memorial Hospital Assn., 929 W. Anderson St., Stillwater. Minn. Bids Nov. 4. CD 10/14.

Curtiss-Wright Corp., 633 Central Ave., Carlstadt, N. J., CA **$223,800,** design and construct 10 kw swimming pool type TEACHING REACTOR at School of Mines & Metallurgy, ROLLA, MO. University of Missouri, 116 Jesse Hall, Columbia, Mo. CD 6/1.

P. G. Troop Constr. Co., 2401 N. Main St., McAlester, Okla., CA **$597,400,** est. $650,000, VALLEY VIEW HOSPITAL addn., ADA, OKLA. Valley View Hospital, Ada., Okla. CD 1/25/27.

Dederick Constr. Co., Box 13067, Houston, Tex., LB **$515,000,** (10 bidders) Base Bid, NEWSPAPER PLANT remodeling, addn., BEAUMONT, TEX. Beaumont Enterprise & Journal, 380 Walnut St., Beaumont, Tex. Bids Oct. 29. CD 10/22.

Dow Chemical Co., Freeport, Tex., Owner Builds, $975,000, AMMONIA PRODUCTION PLANT enlargement, FREEPORT, TEX. CD 11/6.

Barton Investments, Inc., c/o Harlon Lane, c/o Ira Jack Castles, engr., 20 N. Samoson St., Houston, Tex., Owner Builds, **$190,000,** AUTO AGENCY, off 3500 block Old Spanish Trail, HOUSTON, TEX. CD 10/26.

▲ **Brown & Root Inc.,** Box 3, Houston, Tex., CA Est. **$2,250,000,** MEAT PACKING PROCESSING and DISTR. CENTER, Job No. 5195, HOUSTON, TEX. Armour & Co., 401 N. Wabash Ave., P.O. Box 9222, Chicago, Ill. CD 11/10.

▲ **Krebs Constr. Co.,** 3650 W. 11th St., Houston, Tex. LB **$1,162,500** (17 bidders), San Jacinto SENIOR HIGH SCHOOL addns., HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol Ave., Houston, Tex. Bids Nov. 3. CD 10/22.

Oil Center Tool Co., 1912 Airline Rd., Houston, Tex., Owner Builds, **$185,500,** PLANT enlargement, HOUSTON, TEX. CD 5/1/57.

▲ **Frank W. Sharp Constr. Co.,** 1120 W. 43rd St., Houston, Tex., Owner Builds, **$1,190,000,** SHOPPING CENTER and shopping center paved area and auto center, HOUSTON, TEX. CD 9/16.

Stokes Adair Co., 2518 Tangley St., Houston, Tex., Owner Builds, **$172,500,** WAREHOUSE, HOUSTON, TEX.

Suburban Homes Realty & Lumber Co., 901 Little York Rd., Houston, Tex., Purchase and Hire, **$438,275.** 58 DWELLINGS; **$418,625,** 52 DWELLINGS, Oakwilde Subdivision, HOUSTON, TEX. CD 10/22.

H. A. Lott, Inc., Box 25005, Houston, Tex., CA **$624,600,** EDUCATIONAL and SCIENCE addns., HUNTSVILLE, TEX. Sam Houston State Teachers Colleg., Bd. Regents, Austin, Tex. CD 9/23, under LB

Gilmore & Walker, Box 625, Hurst, Tex., LB **$475,662,** est. $450,000, JUNIOR HIGH SCHOOL and ELEMENTARY SCHOOL UNIT No. 1, HURST-EULESS, TEX. Hurst-Euless Ind. School Dist., Hurst, Tex. Bids Oct. 29. CD 10/16.

▲ **Ross E. Cox,** P.O. Box 591, Canon City, Colo., LB **$1,463,600,** combined bids on Washington and Harrison GRADE SCHOOL addns. and HIGH SCHOOL, CANON CITY, COLO. School Dist. No. 1, Fremont County, Canon City, Colo. Bids Nov. 4. CD 10/16.

▲ **Lembke Constr. Co.,** 3100 N. El Paso, Colorado Springs, Colo., CA **$1,115,000,** general contract, 5 story, bsmnt., 81,000 sq. ft. COUNTY OFFICE, COLORADO SPRINGS, COLO. El Paso County Bldg. Auth., Courthouse, Colorado Springs, Colo. Bids Oct. 30, CD 10/20.

F. A. Heckendorf, 231 S. Curtice Ave., Littleton, Colo., CA **$446,935,** 1 story, 38,000 sq. ft. Applewood Grove SHOPPING CENTER, LAKEWOOD, COLO. Midway Development Co., c/o John E. Fuller, 331 Colorado National Bank Bldg., Denver, Colo. Henry J. Boland, 1441 Welton, Denver, Colo., structural engr. Harmon & Beckett, 2243 W. 32 Ave., Denver, Colo., mech. engrs. Albert E. McKittrick, 973 Lincoln St., Denver, Colo., elect. engr. Bids Oct. 30, awarded Nov. 2. CD 10/23.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Wash., Tacoma**—HANGAR MAINTENANCE—BA 11/27—Base Procurement Office, McChord Air Force Base, ... hangar Maintenance, Organization 3 and 4, McChord Air Force Base, IFB 45-603-60-25. CD 3/12/58.

† **Calif., Beale Air Force Base**—FIRE HYDRANTS—BA 12/1—U. S. Eng., 1209 8th St., Sacremento, removal and replacement of fire hydrants, Spec. 2638, ENG-04-167-60-21. CD 11/16/56.

† **Idaho, Mountain Home**—AIR BASE IMPRVS—BA 12/3—U. S. Eng., City-County Airport, Walla Walla, Wash., constr. 2.7 mi. access roads in two locations, Mountain Home Air Force Base, ENG-45-164-60-14. CD 11/4.

Calif., Sacramento—STRUCTURAL STEEL, etc.—BA 12/8—State Div. Architecture, 1120 N. St., structural steel and steel decking for 6 story State Public Works Bldg. addn. at N.E. corner of 0 and 11th Sts. $280,000. Plans deposit $25. CD 12/5, under Public Buildings.

† **Calif., Sacramento**—STORAGE MAGAZINE—BA 12/8—U. S. Eng., 1209 8th St., multi cubicle storage magazine Mather Air Force Base, Spec. 2577, ENG-04-167-60-20. CD 9/25.

▲† **Oregon and Washington**—BA 12/10—U. S. Eng., City-County Airport, Walla Walla, Wash., north shore constr. work involving 2,500 cu. yd. common excav., 1,300 cu. yd. rock excav., 1,100,000 bbl. cement, etc., John Day lock and dam. Plans deposit $200. Extended date. CD 9/29.

† **Arizona**—BA 12/15—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., earthwork, concrete lining and structures, incl. pipe siphons for Wellton-Mohawk main conveyance channel, Sta. 0-23.31 to 1176 plus 65 BK, Gila Project, DC 5256. CD 9/4/56.

† **Oregon and Washington**—SWITCHYARD—BA 12/15—Bonneville Power Admin., 1001 NE Lloyd Blvd., Portland, 0.9 mi., 230 kv line No. 5, The Dalles-Powerhouse-Big Eddy switchyard, Inv. 9053. Plans deposit $25. CD 12/15.

▲ **Wash., Tacoma**—BA 1/5—City, City Hall, completion of Mayfield Dam on Cowlitz River. Extended date. CD 10/21.

▲† **Calif., Beale Air Force Base**—WS 107-A-2 TECHNICAL FACILITIES, etc.—BA After 1/5—U. S. Eng., 1209 8th St., Sacramento, WS 107-A-2 technical facilities, Complex 1A, vicinity of Lincoln, Placer Co., Complex 1B, near Pennington, Sutter Co., Complex 1C, near Chico, Butte Co., Base T-5, Titan missile silos at 3 locations, equipment and propellant terminals, control center, antenna silos and terminals, powerhouses, entry portal silos, blast locks, tunnels, etc., Spec. 2639, ENG-04-167-60-23. $42,000,000. CD 9/22.

BUILDINGS—BA

Calif., Fresno—SCIENCE, etc.—BA 12/8—State Div. Architecture, 1120 N. St., Sacramento, 33,500 sq. ft. science bldg. and 1 story animal bldg. wing, Fresno State College, $875,000. CD 6/19.

Calif., San Jose—MUSIC—BA 12/8—State Div. Architecture, 1120 N. St., Sacramento, 2 story, rein.-con., 25,000 sq. ft. music bldg. addn., San Jose State College. CD 6/18.

HEAVY CONSTRUCTION—LB & CA

A. P. Limebach, 264 E. 27th S., Salt Lake City, Utah, LB **$117,220,** curb and gutter exten. Dist. 282

(Continued on page 160)

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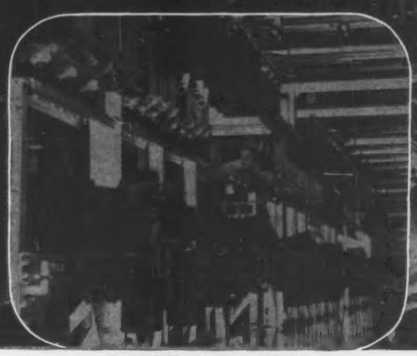
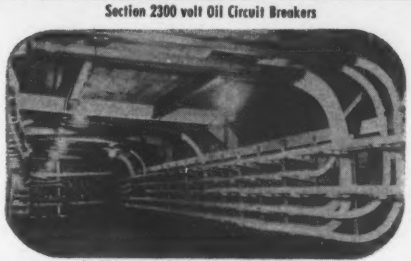
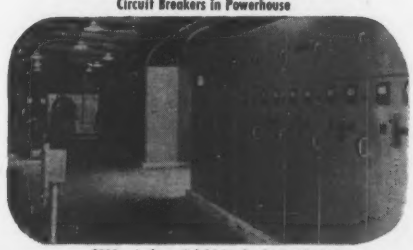


Section 2300 volt Oil Circuit Breakers

Kraft Division Charleston, South Carolina, Mill—West Virginia Pulp and Paper Company



13,800 volt & 2300 volt Cable Left over Circuit Breakers in Powerhouse



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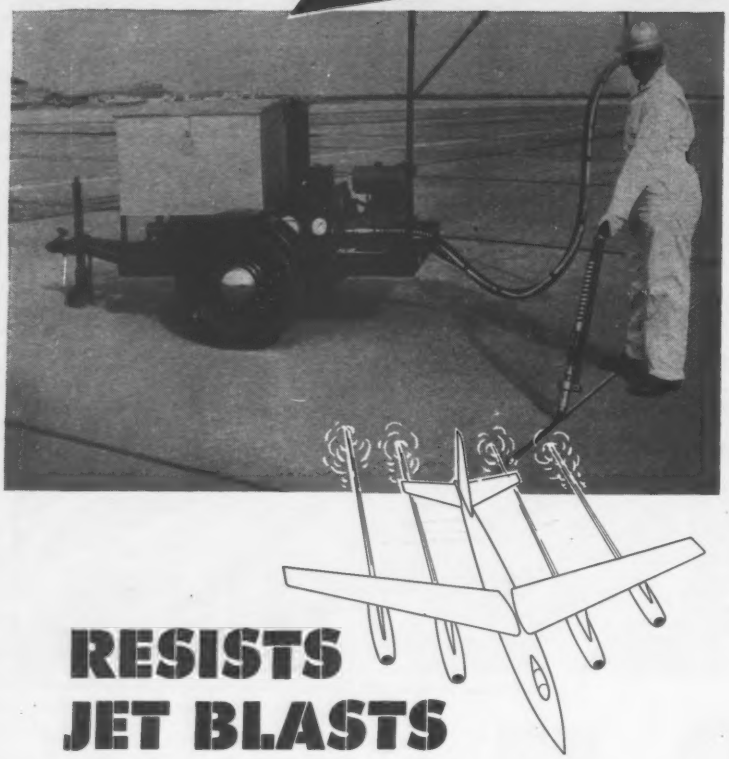

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(Continued from page 158)

from Highland Dr. and 15th E. and 27th and 30th S., SALT LAKE CITY, UTAH. Salt Lake City Corp., 401 City-County Bldg., Salt Lake City, Utah. Bids Oct. 29. CD 3/22/57.

† **Cherf Brothers, Inc., & Sandkay Contractors, Inc.,** Ephrata, Wash., CA **$207,256,** Schedule 2, constr. blended earth lining for Royal Branch Canal, Columbia Basin, Proj. 117C-567, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Oct. 8. CD 9/2.

† **Kenneth E. Beck,** Moses Lake, Wash., CA **$99,709,** constr. blended earth lining for laterals EL85 and EL85X-A, Block 18, Columbia Basin, Proj. 117C-570, WASHINGTON. Bureau Reclamation, Dpt. Interior, Ephrata, Wash. Bids Oct. 20. CD 10/6.

▲ **WASHINGTON**—State Hy. Comn., Dpt. Hys., Olympia, **Lige Dickson Co.,** 3315 S. Pine St., Tacoma, Wash., CA **$1,387,124,** est. $1,650,500, (12 bidders), grading, surf., constr. bit. surf treatment and cement-treated base, b. conc., paving and constr. precast prestressed concrete box girder bridge on 4.457 mi. Primary St. Hy. 1, Pierce Co. line to jct. with Primary St. Hy. 5, King Co. Bids Oct. 27, awarded Nov. 3. CD 10/29, under LB.

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem, Bids opened 11/3.

Ore.—**Peter Kiewit Sons Co.,** Box 177, Vancouver, Wash., LB **$2,138,285,** (9 bidders), Willamette River Bridge on Pacific Hy. and Judkins Point overcrossing on McKenzie Hy., Proj. FAIP I 5-4(33)193 and U-UG-161 (26), Lane Co.;

Ore.—**Durbin Bros.,** Rte. 5, Box 490, Eugene, Ore., LB **$157,870,** (8 bidders), structure and grading, oiling 5.88 mi., Westfall-Harper Section of county road, Proj. FAP S-182(1), Malheur Co.;

Ore.—**Lord Bros.,** 9233 N. Calvert St., Portland, Ore., LB **$219,014,** (12 bidders), 5-lane, 175 ft. RCDG overcrossing, 2-lane, 471 ft. RCDG overcrossing, Corvallis-Newport Hy., Proj. FAP U-222(5), Benton Co.;

Ore.—**Hamilton & Thoms,** Box 726, Eugene, Ore., LB **$337,092,** (10 bidders), McKenzie River overflow bridges, Pacific Hy., ten structures at 5 sites, Proj. FAIP I-5-4-(37)196, Lane Co. CD 10/23.

OREGON—State Hy. Comn., Highway Bldg., Salem, Bids opened 11/3.

Clarence Braden, 22 W. Alder St., Walla Walla, Wash., LB **$399,936,** (12 bidders), grading, oiling 11.04 mi. Haines-Anthony Hy. Proj. FAP S-430(2) and S-SG-168(3), Baker Co. CD 10/23.

N. M. Saliba, 15905 S. Broadway, Gardena, Calif., LB **$228,912,** (14 bidders), 1958 Storm Drain Bond Issue Proj. 579, Sierra Madre Storm Drains, Lines A, B, C and D, Sierra Madre, Arcadia, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Oct. 30. CD 10/7.

Matt J. Zaich Co., 6828 Farmdale Ave., North Hollywood, Calif., LB **$291,690,** (10 bidders), Proj. No. 133, Bouton Creek Channel, Unit 2, Line, A&B, Long Beach, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Oct. 30. CD 10/7.

† **Johnson Western Constructors,** 2031 E. Belt St., San Diego, Calif., LB **$126,426,** est. $98,800, (2 bidders), repair and replacement seaplane beaching facilities, Naval Air Station, North Island, Spec. 27982-59, SAN DIEGO, CALIF. Dist. P. Wks. Office, Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Nov. 3. CD 10/22.

Daley Corp., Box 4067, San Diego, Calif., CA **$110,816,** imprv. Ventura Blvd. Mission Blvd. to Midway Dr., SAN DIEGO, CALIF. City, Civic Center, San Diego, Calif. Bids Oct. 20.

BUILDINGS—LB & CA

Masonic Temple Holding Corp., 4th and F Sts., Anchorage, Alaska, rejected bids steel OFFICE and RETAIL STORE, ANCHORAGE, ALASKA. CA **$517,000.** Will re-advertise. (Correction—status). CD 9/3, under CA.

Imperial "400" Motels, Inc., c/o Palmer & Krisel, archts., 11757 San Vicente Blvd., Los Angeles, Calif., Owner Builds, **$500,000,** 50 units Imperial "400" MOTEL, East Van Buren St., PHOENIX, ARIZ.

Baugh Constr. Co., Rainier Ave. and Edmonds St., Seattle, Wash., LB **$114,890,** est. $85,000, (5 bidders), ADMINISTRATION BLDG. and TOLL PLAZA, installing collection equipment on Secondary St. Hy. 9-E for Hood Canal toll bridge, Kitsap Co., WASHINGTON. State Hy. Comn., Olympia, Wash. Bids Nov. 3. CD 10/19.

Dike & Colegrove, Inc., 419 E. 17th St., Costa Mesa, Calif., Owner Builds, **$898,217,** 29 stucco APARTMENTS, Tract 2822, COSTA MESA, CALIF.

W. H. Jewett, 1603 W. Commonwealth Ave., Fullerton, Calif., CA **$168,000,** 120x200 ft., frame INDUSTRIAL BLDG., 1301 E. Orangethorpe, FULLERTON, CALIF. Dr. Pepper Bottling Co., 700 S. Spadra St., Fullerton, Calif.

▲ **Laramore Constr. Co.,** 1111 Beverly Blvd., Whittier, Calif., CA **$1,006,296,** eighty-five 1,200 sq. ft. frame, stucco DWELLINGS, Tracts 3557 and 3558, GARDEN GROVE, CALIF. Kingston Builders, 1111 Beverly Blvd., Whittier, Calif.

▲ **Roel Constr. Co.,** Box 361, LaJolla, Calif., LB **$1,015,000,** (7 bidders), Oneonta ELEMENTARY SCHOOL and Bayside ELEMENTARY SCHOOL, IMPERIAL BEACH, CALIF. South Bay Union School Dist., 601 Elm St., Imperial Beach, Calif. Bids Nov. 3. CD 10/22.

J. A. Campbell, Inc., 6510 Cherry Ave., Long Beach, Calif., CA **$878,000,** Los Altos HIGH SCHOOL classroom and shop addns., 25325 E. Las Robles Ave., LA PUENTE, CALIF. La Puente, Union High School

(Continued on page 162)

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(Continued from page 160)

Dist., 15615 E. Nelson Ave., La Puente, Calif. Bids Oct. 22. CD 11/2, under LB

▲ **Slattebo Corp.**, 5175 West Washington Blvd., Los Angeles, Calif., CA $1,287,100, Fleming JUNIOR HIGH SCHOOL, 25425 Walnut St., Lomita, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro, Los Angeles, Calif. James R. Friend, 3305 Wilshire Blvd., Los Angeles, Calif., archt. C. G. DeSwarte, 3305 Wilshire Blvd., Los Angeles, Calif., engr. Bids Oct. 30. CD 10/23, under LB.

Wm. P. Neil Co., 4814 Loma Vista Ave., Los Angeles, Calif., CA $290,000, 71,000 sq. ft. WAREHOUSE addn., 6300 E. Sheila St., LOS ANGELES, CALIF. Lever Bros., 6300 Sheila St., Los Angeles, Calif.

▲ **Shelton L. Pollock**, 5880 W. Pico Blvd., Los Angeles, Calif., CA $1,660,000, CENTRAL HEATING and REFRIGERATION PLANT with LAUNDRY BLDG., Harbor General Hospital, Torrance, LOS ANGELES, CALIF. Bd. Supervs. Los Angeles Co., 501 Hall of Records, Los Angeles, Calif. Bids Oct. 14, awarded Nov. 3. CD 10/19, under LB.

Carpenter & Smallwood, 3838 W. Santa Barbara St., Los Angeles, Calif., CA $300,000, 160x300 ft. brick WAREHOUSE and FACTORY, 9000 Belanca Ave., LOS ANGELES, CALIF. Sam Rosenmutter, 9400 Belanca Ave., Los Angeles 45, Calif. George Novikoff, 3858 W. Santa Barbara St., Los Angeles, Calif., engr.

▲ **Marine Development, Inc.**, 2170 Avenida de La Playa, La Jolla, Calif., CA $1,329,655, 141 DWELLINGS, Highland Park Estates Tract No. 6, SAN DIEGO, CALIF. Heritage Inc., Box 122, La Jolla, Calif.

† **Mac Isaacs & Menke Co.**, 3440 E. 14th St., Los Angeles, Calif., CA $385,000, 260 ft. x 220 ft., concrete WAREHOUSE, Delhi Rd., SANTA ANA, CAL F. U. S. Divers Co., 11201 W. Pico Blvd., Los Angeles, Calif.

Kenneth Urton, Box 4037, 725 Cacique St., Santa Barbara, Calif., LB $656,500, est. $462,540, (5 bidders), 2 story, 24,000 sq. ft. POLICE FACILITY BLDG., De La Guerra and Garden Sts., SANTA BARBARA, CALIF. City, City Hall, Santa Barbara, Calif. Bids Oct. 29. CD 10/16.

▲ **Dumas Constr. Co.**, 5831 Beverly Blvd., Los Angeles, Calif. & **John A. Alexander Co.**, I-c, 2620 Zoe St., Huntington Park, Calif., CA Est. $2,000,000, design and construct, Surf Rider MOTEL addn., SANTA MONICA, CALIF. Doric Co., 500 Wall St., Seattle, Wash. CD 9/3.

Barney Rubin, 5638 Van Nuys Blvd., Van Nuys, Calif., Owner Builds, $160,000, 130x160 ft. concrete block FACTORY, 14731 Califa St., VAN NUYS, CALIF.

Elmer E. Everett, 10962 Victoria Ave., Whittier, Calif., Owner Builds, $687,000, 10 APARTMENTS, Regatta Ave. and Mines Blvd., WHITTIER, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

▲ **B. C., Vancouver** — BA 12/23 — Greater Vancouver Sewage & Drainage Dist., 2294 W. 10th St., rein.-con., concrete block sewage treatment plant, two digesters, sedimentation and pre-aeration tanks, West Vancouver. $1,000,000. Plans deposit $25. K. E. Patrick, 2294 W. 10th St., engr. CD 4/30.

BUILDINGS—BA

▲ **Que., Montreal (Dorval)** — AIRPORT HOTEL — BA 11/24—Skyline Hotel Ltd., c/o Basil Capes, archt., 5140 Dundas St. W., Toronto, Ont., 10 story, 250 room airport hotel, Cote de Liesse Rd. $1,500,000. S. S. Vozoris, 4195 Dundas St. W., Toronto, Ont., engr. Colin H. Copeman, 1117 St. Catherine St. W., assoc. archt. CD 11/6.

▲ **Man., Winnipeg**—HOSPITAL—BA 11/25—Winnipeg General Hospital, 700 William Ave., (selected list of bidders), service wing hospital addn. $4,000,000. Moody, Moore & Partners, 295 Broadway, archts. CD 1/5/53.

Ont., Hamilton—TEACHERS COLLEGE—BA 11/26—Dpt. P. Wks., Parliament Bldg., Toronto, teachers college addn., southwest corner McMaster University campus, $400,000. Plans deposit $75. W. Bruce Ridell, 2 Hughson St. S., Hamilton, archt. CD 7/17/53

▲ **Que., Montreal** — SCHOOL — BA 12/9 — Protestant School Bd. of St. Laurent, St. Laurent, Sir Winston Churchill High School. $2,000,000. Plans deposit $200. de Belle & White, 5925 Monkland Ave., archts. CD 10/19.

BUILDINGS—SLC

Ont., Hamilton — STUDENT CENTRE — McMaster University, Hamilton, soon lets contract student centre, Sterling Ave. $850,000. Kyles & Kyles, 247 John St. W., archts. CD 7/20.

BUILDINGS—LB & CA

Howden Constr. Co. Ltd., 1877 Marine Dr., North Vancouver, B. C., LB $669,000, 2 story, 58,000 sq. ft. rein.-con. JUNIOR-SENIOR HIGH SCHOOL, NORTH VANCOUVER, B. C. Dist. 44 School Bd., 721 Chesterfield, North Vancouver, B. C. Per Christoffersen, 1161 Melville St., Vancouver, B. C., engr. Bids Oct. 22. CD 10/8.

▲ **Canadian Engineering & Contg. Co. Ltd.**, 25 Hughson St. S., Box 739, Hamilton, Ont. CA Est. $1,450,000, 4 story, Y-shaped MENS RESIDENCE, HAMILTON, ONT. McMaster University, Hamilton, Ont. Bids Oct. 22, awarded Nov. 3. CD 10/13.

▲ **Newman Bros. Ltd.**, 4-A Clark St., St. Catharines, Ont., CA $1,220,000, 3 story, 75,000 sq. ft. concrete frame, concrete block SECONDARY SCHOOL, North St., SAULT STE. MARIE, ONT. Bd. Educ., Sault Ste. Marie, Ont. Bids Oct. 7, awarded Nov. 4. CD 10/16, under LB.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Edica**, Box 920, San Jose, Costa Rica, CA $2,109,000, est. $2,100,000, CHILDREN'S HOSPITAL, Paseo Colon and Calle 20, SAN JOSE, COSTA RICA. Ministry P. Health, Paseo Colon and 20th St., San Jose, Costa Rica. Bids Sept. 16, awarded Oct. 22. CD 10/15, under LB.

PROPOSED PROJECTS

WATER SUPPLY

Ala., Killen—City, City Hall, water lines, 100,000 gal. elevated steel tank, $100,000. Ladd Eng. Co., P. O. Box 29, Fort Payne, consult. engr.

Ala., Talladega—City, City Hall, water lines. $100,000. Ray, Peoples & White Eng. Co., Craddock Bldg., Sylacauga, consult. engr. CD 12/23/53.

▲ **Calif., Santa Clara**—City, City Hall, voted $1,600,000, bonds, water sys. imprvs. CD 11/13/50.

Conn., Danielson—Crystal Water Co., 184 Main St., water supply, well, line from well to South St., 500,000 gal. water tank, line from proposed tank to School St. $100,000.

Fla., Eau Gallie—City, City Hall, WW imprvs. $500,000. A. P. & R. K. Michaels, 3025 E. South St., Orlando, consult. engrs.

Fla., LaBelle—City, City Hall, WW system $100,000. Gee & Jensen, 117½ S. Dixie Highway, West Palm Beach, consult. engrs.

Ga., Rome—City, City Hall, water system extens. $675,000. Robert & Co., 96 Popular St. N. W., Atlanta, consult engrs. CD 2/25/54.

▲ **Ind., Indianapolis**—Indianapolis Water Co., 1220 Speedway Ave., 3½ mi. 36 and 54 in pipe feeder water main, 5 m. g. pumping station, $1,500,000.

▲ **La., Shreveport**—City, City Hall, voted bonds Oct. 20, water sys. $850,000; WW $800,000. CD 9/30.

N. Y., Croton-on-Hudson—Village, Village Hall, 1 m.g. reservoir $119,000. To go ahead summer 1960.

O., Marietta—Comrs. Washington Co. Marietta, water sys. at Waterford, $160,000. Jennings-Lawrence Co., 1392 King Ave., Columbus, Zone 12., consult engr.

Ore., Oregon City—Bd. Comrs. Holcomb-Outlook Water Dist., water distr. sys. $119,000.

Pa., Glenfield—General State Auth., 18th and Herr St., Harrisburg, completion water supply system, incl. 2 cribs in Ohio River and treatment bldg. for Dixmont State Hospital $375,000. A. F. Jones, c/o owner, ch. engr.

Wash., Kirkland—City, City Hall, defeated bonds Oct. 27, storage tanks, lifts, new mains and lines to permit city to bring water from Seattle's sys. into Kirkland, $300,000. R. W. Beck & Assocs., Tower Bldg., Seattle, Zone 1, consult. engrs. CD 9/18.

Wash., Port Angeles—City, City Hall, relay 18,562 ft., steel or c.i. pipe main supply line, $490,000; relay 18,562 ft. steel or c.i. pipe main supply line from intake, $490,000; pipe line from Park Ave. to new reservoir, $285,500; line from reservoir main line above Park Ave. to Albert St., $47,000; reservoir, $267,900; pipe line from new reservoir to Reservoir No. 2 on Lincoln Heights, $173,100; 24 in. line from Reservoir No. 1 on Peabody Heights to Park Ave., $66,280; temporary pump station, $56,220; 4th reservoir in addn. to one now proposed, $141,450; convert water sys. from two-zone to three-zone pressure sys., $88,150; replace 20 in. water supply line, $343,280, Constr. in 1960. R. W. Beck & Assocs., Tower Bldg., Seattle, Zone 1, consult. engr. CD 11/3.

Wis., Menomonee Falls—Village, Village Hall, water sys., well, reservoir and transmission sys. $600,000. Constr. 1960. Ruekert & Mielke, 420 Frederick St., Waukesha, consult. engrs. R. Bruss, c/o owner, engr. CD 10/30/58.

SEWERS, WASTE DISPOSAL

Calif., Beverly Hills—City, 450 Crescent Dr., 8- to 15-in. sanitary sewers, Charleville Blvd. and other streets, Bedford and Benedict Canyon Sewers $192,000, 10 and 15 in. Crescent Dr. sewer, Parkway to Sunset Blvd. $103,500, Storm Drain A-6, Wilshire Blvd. $319,911. Carlos Ville-Riestra, c/o owner, engr. CD 10/14/57.

Calif., Los Angeles—Los Angeles County, 501 Hall of Records, 3.882 mi. vitr. clay sanitary sewers, Heber St., Glendora $201,650; 4,690 ft. 8 in. vitr. clay pipe, 13,180 ft. 8 in. and 6,970 ft. 6 in. std. structural vitr. clay sewers, Basetdale Ave., La Puente, $138,875.

▲ **Calif., Santa Clara**—City, City Hall, voted $5,100,000 bonds, sanitary sewer, $1,400,000 bonds, storm drains.

Colo., Montrose—City, City Hall, sewerage system imprvs. $345,000. Harold Hoskins & Assocs., 1018 8 Ave., Greeley, consult. engrs.

Colo., Thornton—Northwest Utilities Co., 8826 Washington, primary clarification, conversion existing primary clarification, secondary clarification, biofiltration, chlorination facilities, $120,000. Ripple & Howe, 833 23 St., Denver, consult. engrs. Bids in January or February.

Fla., Cottondale—City, City Hall, sewage treatment plant, $200,000. Barrett, Daffin & Bishop, 118 N. Gaisden St., Tallahassee,, consult. engrs.

Fla., Delray Beach—City, City Hall, storm sewers $100,000, Brockway, Weber & Brockway, 125 S. Olive Ave., West Palm Beach, consult. engrs. CD 9/18/46.

Fla., Eau Gallie—City, City Hall, sanitary sewer imprvs. $500,000. A. P. & R. K. Michaels, 3025 E. South St., Orlando, consult. engrs.

Fla., St. Petersburg—City, City Hall, drainage and storm sewer, 34 Ave., North 51 to 58 Sts., $89,200; 6,400 ft. drainage, 49 St. South and 15 Ave. South, $262,100; storm sewer and drainage 54 St. North Burlington to 9 Aves. North, $100,000. Paul Jorgenson, city engr. CD 9/9.

▲ **Idaho, Burley**—City, City Hall, sewage disposal plant, $1,500,000. Cornell, Howland, Hayes & Merryfield, and Earl Reynolds, Jr., Idaho Bldg., Boise, engrs., making feasability survey. CD 3/2/48.

Ill., Arcola—City, City Hall, sanitary sewers, sewage treatment plant, $300,000-$400,000. Clark, Daily & Dietz, 211 N. Race St., Urbana, consult. engrs.

▲ **Ill., Chicago**—City, City Hall, voted bonds Nov. 3, sewers extension, Beverly-Calumet and Wellington Ave. systems, $15,000,000. CD 9/11.

▲ **Ill., Chicago**—Dpt. Purchases, City Hall, 1,200 ton incinerator, Kinzie and Pulaski Rd. area. $5,500,000. Bids in 1960.

Ill., Chrisman—City, City Hall, sewerage sys., Incl. one interceptor sewer and sewage treatment plant, $165,000. Clark, Daily & Dietz, 211 N. Race St., Urbana, consult. engrs.

Ill., Coal City—Village, Village Hall, sanitary sewerage sys., sewage treatment facilities, $100,000. Baxter & Woodman, Crystal Lake, consult. engrs.

Ill., Delavan—City, City Hall, sewerage sys., Incl. sewer lines, treatment plant. $334,000-$384,000. Casler & Stapleton, Jacksonville, consult. engrs.

Ill., Greenview — Village, Village Hall, sewerage sys. $240,000. Warren & Van Pragg, Inc., 253 S. Park, Decatur, engr.

▲ **Iowa, Council Bluffs**—City, City Hall, sewage treatment plant, auxiliaries, etc. $2,000,000. ($250,000 Federal funds to help finance). Henningson, Durham & Richardson, Inc., 2962 Harney St., Omaha, Neb., consult. engr. CD 1/31/47.

▲ **La., Shreveport**—City, City Hall, voted bonds Oct. 20, sanitary sewers, $650,000; sanitary sewerage sys. imprvs. $1,200,000; storm drainage $1,500,000; incinerator $400,000. CD 9/30.

▲ **Mass., Quincy**—City, City Hall, incinerator near Quarry St. Over $1,000,000. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. for engineering study.

N. H., Northumberland—Bd. Selectmen, sewerage system and treatment plant. $300,000.

O., Columbus—Comrs. Franklin Co., Court House, sewers and sewage treatment plant, Groveport, $550,000. CD 6/24/52.

O., Grove City—City, City Hall, sewage treatment plant, $465,000. Jennings-Lawrence, Co., 1392 King Ave., Columbus, Zone 12, consult. engr. CD 1/23.

▲ **Pa., York**—Shiloh Sewer Auth., 2273 Sunset Lane, sewerage system and treatment plant, Manchester Tpk. $1,052,000. To go ahead 1960.

▲ **Tenn., Elizabethton**—City, City Hall, storm drainage sewers city-wide. Over $2,000,000. Allen & Hoshall, 65 McCall Ave., Memphis, consult. engrs.

Tenn., Newport—City, City Hall, sewage disposal plant. $730,000. Jas. McDonald, 1515 Pembroke Ave. N.E., Knoxville, consult. engr. CD 2/6.

Tex., Center—City, City Hall, voted bonds Oct. 24, sewage plant imprvs. $220,000. CD 10/14.

Tex., Dallas—Tynes & Burch Constr. Co., 537 Harvard Drive, sanitary storm sewers, off Hy. 67 and Gus Thomasson Rd. $129,500.

Tex., Houston—Harris County Fresh Water Dist. No. 20, Comrs. Court, Courthouse, storm drainage $90,000, sanitary sewers $95,000, 329 acre tract Walnut Bend section, north of Westheimer Rd.

Tex., Houston—Lakewood Building Co., 4034 Grapevine Rd., storm sewers, $95,000; sanitary sewers $95,000, area Woodforest Subdivision.

Tex., Llano—Woodrow Wilson & Assocs., Llano, Tex. (composed of Geo. M. Boswell, San Angelo, Tex., Harold B. Boswell and Glen H. Rhodes, Midland, Tex. and Woodrow Wilson, Llano, Tex.) storm sewers, $95,000; sanitary sewers, $105,000, 175 acre tract named Greenwood Acres near Lake Buchanan.

Va., Roanoke—City, City Hall, sewerage lines, Washington Park. $100,000. CD 6/30/44.

Va., Staunton—City, City Hall, sewage treatment plant. $675,000.

W. Va., Rivesville—Town, Town Hall, sewerage collection and treatment plant, Proj. No. P-W. VA-3032. $400.000. To go ahead early 1960.

Wis., Brookfield—City, City Hall, sewers, $280,000; sewage treatment plant, $370,000. Bids in February 1960. Ruekert & Mielke. Inc., 420 Frederick St., Waukesha, consult. engrs. F. Robinson, c/o owner, engr. CD 8/20.

Wis., Rockton—Village, Village Hall, sanitary sewers, treatment plant, $440,000. De Jong Middaugh & Assocs., Rockford, Ill., consult. engrs.

BRIDGES

▲ **Ill., Chicago**—Dpt. Purchases, City Hall, movable bridge, Kedzie Ave. over Sanitary Canal (3400 S.) $2,500,000. Bids 1961. CD 6/10/57.

▲ **Ill., Chicago**—City, City Hall, voted bonds Nov. 3, Halsted St. and Chicago Ave. bridge, Archer Ave. and Chicago River bridge, Damen Ave. bridge, $15,000,000. Steve Michuda, 320 N. Clark St., Zone 10, owners' engr. CD 9/11.

Ont., North Bay—City, City Hall, railway overpass, Golf St. $800,000. M. M. Dillon & Co. Ltd., 141 Maple St., London, and 88 Eglinton Ave. E., Toronto, consult. engrs. CD 10/17/50.

STREETS AND ROADS

Ala., Tuscaloosa—Tuscaloosa Co. Bd. Revenue, Courthouse, 17 mi. road paving $340,000. Sherlock, Smith & Adams, 303 Washington Ave., Montgomery, consult. engrs. Constr. 1960.

Calif., Beverly Hills—City, 450 N. Cresent Dr., imprv. Sunset Blvd. N. & S. Roadway, $120,000. Carlos Valley-Riestra, c/o owner, engr.

Calif., Burbank—City, 275 E. Olive Ave., resurf. Burbank Blvd., Lima St. to Victory Blvd., $100,000; resurf. Lake St., Alameda Ave. to Magnolia Blvd., $112,500. C. W. Paige, c/o owner, engr.

▲ **Calif., Santa Clara**—City, City Hall, voted $5,700,000 bonds, street imprvs. and grade crossings.

Calif., Santa Monica—City, 1685 Main St., grade, pave, drainage structures, 22nd Court. $156,306. CD 11/15/44.

Ga., Savannah—City, City Hall, pave Bee Rd., from 51 St. to Skidaway Rd., $135,000.

▲† **IDAHO**—Bureau P. Rds., Dpt. Commerce, 609½ Bannock St., Boise,
Idaho Co.—grading Lolo Pass Hy. Total cost $8,000,000. Bids 1960. C. R. Salmen, c/o owner, div. engr.

▲ **La., Shreveport**—City, City Hall, voted bonds Oct. 20, paving streets. $2,850,000. CD 9/30.

OHIO—State Dpt. Hys., State Dpts. Bldg., Columbus, Zone 15,
Lake Co.—access roads to Rte. 2, $144,800.

▲ **OHIO**—Dpt. Hys., State Dpts. Bldg., Columbus, Zone 15,
Lucas and Wood Counties—21 mi. four lane U. S. Rte. 25 between Perrysburg and Cygnet, $16,800,000. Tryge Hoff & Assocs., 1922 E. 107th St., Cleveland, consult. engrs.

Pa., Levittown—Bd. Comrs. Bristol Twp., 85 Holly Dr., reconstr. River Rd. $155,350.

Tex., Houston—Harris County Fresh Water Dist. No. 20, c/o Commrs. Court, Courthouse, paved streets, roads, 329 acre tract Walnut Bend Section, north of Westheimer Rd. $100,000.

Tex., Houston—Lakewood Building Co., 4034 Grapevine Rd., asphalt paved streets, curb and gutter, Woodforest Subdivision. $100,000.

Tex., Llano—Woodrow Wilson & Assocs., Llano, Tex., (composed of Geo. M. Boswell, San Angelo, Tex., Harold B. Boswell and Glen H. Rhodes, Midland, Tex. and Woodrow Wilson, Llano, Tex.) street paving, 175-acre tract named Greenwood Acres near Lake Buchanan. $100,000.

Tex., Mount Pleasant—City, paved and improved streets, $175,000.

▲ **VIRGINIA**—State Dpt. Hys., 1221 E. Broad St., Richmond,
Frederick Co.—6.3 mi. section Rte. 50, $1,225,000.
Shenandoah, Warren and Frederick Counties—23.6 mi. highway from Rte. 42 near Woodstock to U. S. Rte. 11, $18,365,000.

▲ **Va., Charlottesville**—City, City Hall, connecting road from Ridge St. to McIntire Rd. $1,050,000. CD 2/7/45.

EARTHWORK, WATERWAYS

Conn., New Britain—City, City Hall, flood control Day and Belden Sts. $385,000. Charles T. Main, Inc., 80 Federal St., Boston, Mass., consult. engr.

▲ **New Jersey**—Monmouth Co., Court House, Freehold, yacht basin at Spermaceti Cove, Highlands, $5,000,000.

Okla., El Reno—City, City Hall, voted bonds Oct. 27, floodway expansion. $197,000. William Alexander, El Reno, staff engr. CD 10/8.

AIRPORTS

† **Alaska, Barter Air Force Station**—TERMINAL—U. S. Eng., Alaska Dist., Anchorage, APO 942, Seattle, Wash., air freight terminal, $230,000 funds released.

† **Alaska, Bethel**—UTILITIES—U. S. Eng., Alaska Dist., Anchorage, A.P.O. 942, Seattle, Wash., utilities, Bethel Air Force Base, $160,000 funds released.

† **Alaska, Campion Air Force Station**—UTILITIES—U. S. Eng., Alaska Dist., Anchorage, A.P.O. 942, Seattle, Wash., utilities, $200,000 funds released.

† **Alaska, Elmendorff Air Force Base**—LIGHTING, etc.—U. S. Eng., Alaska Dist., Anchorage, APO 942, Seattle, Wash., airfield approach lighting, missile assembly shop, ammunition storage, near Anchorage, $690,000 funds released. CD 9/28.

† **Alaska, Gulkana**—GAP FILLER—U. S. Eng., Alaska Dist., Anchorage, APO 942, Seattle, Wash., gap filler Gulkana Air Force Base, $450,000 funds released.

† **Alaska, King Salmon**—STORAGE, etc.—U. S. Eng., Alaska District, Anchorage, APO 942, Seattle, Wash., ammunition storage, King Salmon Airport, $340,000 funds released. CD 9/28, under Alaska, Naknek.

▲† **Alaska, Murphy Dome Air Force Station**—ELECTRIC POWER, etc.—U. S. Eng., Alaska Dist., APO

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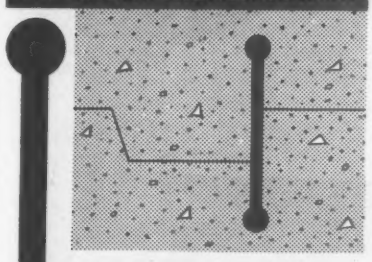

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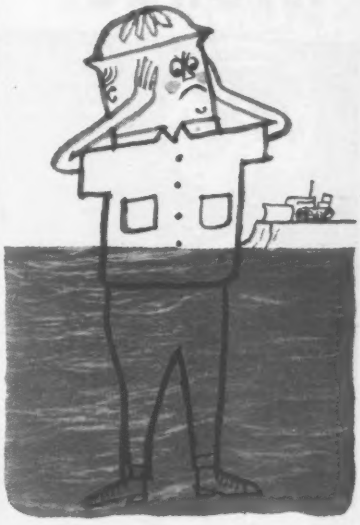

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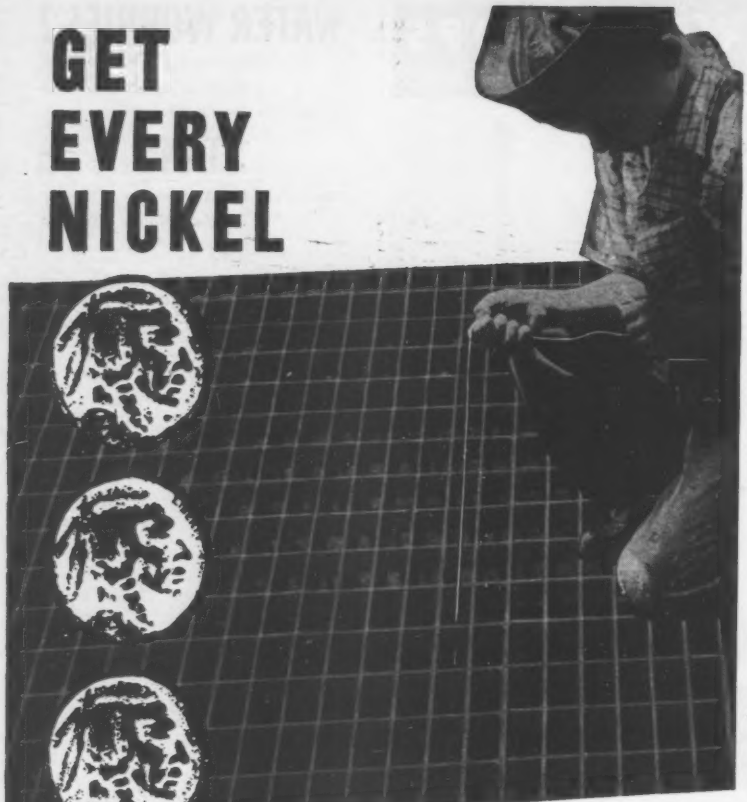

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942, Seattle 4, Wash., electric power and utilities, $1,260,000 funds released.

† **Alaska, Neklason Lake Air Force Station**—COMMUNICATIONS FACILITIES—U. S. Eng., Alaska Dist., Anchorage, Alaska, APO 942, Seattle, Wash., communications facilities, $235,000 funds released.

▲† **Alaska, Northeast Cape**—COMPOSITE OPERATIONS BLDG., etc.—U. S. Eng., Alaska Dist., Anchorage, APO 942, Seattle 4, Wash., composite operations bldg. and multipurpose recreation facilities, Northeast Cape Air Force Station, $1,730,000 funds released.

† **Alaska, Point Barrow Air Force Base**—TERMINAL—U. S. Eng., Alaska Dist., Anchorage, A.P.O. 942, Seattle, Wash., air freight terminal, Point Barrow Air Force Base, $5,200,000 funds released.

† **Alaska, Soldotna**—FACILITIES—U. S. Eng., Alaska Dist., Anchorage, APO 942, Seattle, Wash., communication facilities, Soldotna Air Force Base, $235,000 funds released.

† **Calif., Beale Air Force Base**—AMMUNITION STORAGE etc.—U. S. Eng., 1209 8th St., Sacramento, ammunition storage, missile assembly bldg., missile storage facilities, missile leaunching complex, utilities, road and removal of hazard. $43,000,000 funds released.

▲† **Calif., Lompoc**—MISSILE LAUNCHING TEST FACILITIES—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., missile launching test facilities, Vandenburg Air Force Base, $5,200,0000 funds released.

▲† **Kan., Salina**—COMMUNICATIONS SUPPORT FACILITIES, etc.—U. S. Eng., 911 Walnut St., Kansas City, Mo., communications support facilities, missile assembly bldg., liquid oxygen plant, missile launching station, re-entry vehicle facility and utilities, Schilling Air Force Base, $31,900,000 funds released. CD 3/19.

▲ **Ill., Chicago**—HANGARS—Dpt. Purchases, City Hall, hangar, Capital Airlines, lessee, $3,200,000; hangar, Eastern Airlines, lessee, $3,820,000; hangar, Delta Airlines, lessee, $1,750,000; hangar, Flying Tigers, lessee, $700,000; hangar, North Central Airlines, lessee, $1,000,000; hangar, Northwest (Braniff) Airlines, lessee, $1,750,000; hangar, Ozark Airlines, lessee, $750,000; hangar, Transworld Airlines, lessee, $5,000,000; hangar, United Airlines, lessee, $5,000,000, all foregoing at Chicago-O'Hare International Airport, Park Ridge. Naess & Murphy, 80 E. Jackson Blvd., Zone 4, consult. engrs. Bids 1960. CD 12/3/57.

† **Mich., Selfridge Air Force Base**—COMMUNICATIONS and ELECTRONICS SHOP—U. S. Eng., 1101 Washington Blvd., Detroit, Mich., communications and electronics shop. $125,000 funds released. CD 9/25.

† **Minn., Duluth** — AIRFIELD APPROACH LIGHTING, etc.—U. S. Eng., 180 E. Kellog Blvd., St. Paul, airfield approach lighting, armament and electronics shop, chapel annex, Duluth Municipal Airport. $500,000 funds released. CD 9/25.

▲† **Neb., Lincoln**—COMMUNICATIONS SUPPORT FACILITIES, etc.—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, communications support facilities, missile assembly bldg., missile storage facilities, missile launching station, re-entry vehicle facility and utilities, Lincoln Air Force Base. $31,900,000 funds released.

† **N. M., Alamogordo**—MISSILE INSTRUMENTATION LABORATORY—U. S. Eng., 2132 Central Ave. S.E., Albuquerque, missile instrumentation laboratory and water distribution mains at Holloman Air Force Base, $810,000 funds released. CD 9/28.

N. C., Greensboro—HANGAR—Greensboro-High Point Airport Auth., 200 S. Elm St., hangar, $100,000. Southern Mapping & Engineering Co., 216 E. Commerce Pl., consult. engr.

O., Toledo — HANGAR, etc. — Electric Autolite Co., Champlain St., hangar-airplane hangar at Toledo Express Airport, $200,000.

† **Pa., Phila.**—RESEARCH FACILITIES—Dpt. Navy, Phila. Naval Base, Phila., Pa., plans by Albert C. Wood Assocs., Inc., 1832 Arch St., Phila., Pa., catapult and arrest component research facilities, Naval Air Material Center, NBy 115686, $333,000. CD 9/17/57.

† **Tex., El Paso**—AIRFIELD APPROACH LIGHTING, etc.—U. S. Eng., 2132 Central Ave. S.E., Albuquerque, N. M., airfield approach lighting, radar approach control center, Biggs Air Force Base. $230,000 funds released. CD 9/25.

Va., Fairfax—AIRPORT—Bd. Suprvs. Fairfax Co., defeated bond referendum Nov. 3, county airport, $200,000.

Wis., Clintonville—AIRPORT IMPRVS.—City, City Hall, airport imprvs. $155,000. Constr. in 1960. Foth & Porath, Inc., 214A N. Adams St., Green Bay, engr. CD 9/18/58.

LATIN AMERICA

▲ **Argentina, General Guemes** — MILL — Altos Hornos Guemes S. A., General Guemes, Salta, 70 tons daily capacity pig iron steel mill. $2,500,000.

▲ **Argentina, Santa Fe**—PLANT—Industria Automotirz Santa Fe, S. A., automobile and light truck mfg. plant. $15,600,000.

FOREIGN

▲ **Nigeria, Kaduna**—HOSPITAL—Govt. of Nigeria, Lagos, hospital. $1,680,000.

AMERICANS ABROAD

† **Johnson Island**—LAUNCH FACILITY—U. S. Eng., 2301 Grant St., Mobile, Ala., U.S.A., plans by

Maurice H. Connel & Assoc., Inc., archt.-consult. engr., 315 N.W. 27th Ave., Miami 35, Fla., U.S.A., launch facility.

PUBLIC BUILDINGS

▲ **Ala., Mobile**—AUDITORIUM—City, City Hall, auditorium, $6,000,000. Palmer & Baker Engineers, Inc., 2460 Government St., archt.-consult. engr. CD 4/1.

Calif., El Centro—SCHOOL—El Centro School Dist., const. Desert Garden Elementary School, $495,000.

Calif., Escondido—SCHOOLS—Escondido Union High School Dist., voted $950,000 bonds Oct. 27, schools. CD 10/19.

▲ **Calif., Lakeside**—SCHOOLS—Lakeside Union Elementary School Dist., voted $1,750,000 bonds Oct. 27, schools. CD 9/14.

▲ **Calif., Pomona**—SCHOOLS—Pomona Unified School Dist. voted $3,650,000 bonds Oct. 27, schools. CD 10/6.

Conn., New Fairfield—SCHOOL—Town, Town Hall, plans by William W. Sunderland, 81 West St., Danbury, elementary school, Gillotti Rd., $400,000.

Conn., Old Greenwich—FIRE HOUSE—Town, Bd. Selectmen, Town Hall, plans by Carl J. Jensen, 45 E. Putnam Ave., Greenwich, 2 story, semi-fireproof 68 x 110 ft. firehouse for Sound Beach Fire Dpt. $400,000. Werner, Jensen & Korst, 641 Summer St., Stamford, consult. engrs. Alfred O. Blackman, Lafayette Place, Greenwich, mechanical engr. CD 1/29.

▲ **Conn., Stamford**—SCHOOL ADDNS.—Town, Town Hall, plans by Sherwood, Mills & Smith, 65 Broad St., Cloonan School addn., alterations, $625,000. CD 10/29; Rogers School addn., Williams St., $990,-100. Bernard F. Greene, 205 Summer St., consult. engr. CD 6/4.

▲ **Conn., Wethersfield**—OFFICE—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Golden-Storrs Assocs., 1232 Farmington Ave., West Hartford, 5 story office, for State Labor Dpt., Jordan Lane, $2,600,000. Samuel Glaser Assocs., 234 Clarendon Rd., Boston, Mass., consult. engrs. CD 10/13.

† **D. C., Wash.**—BLDG. CONVERSION—Area Public Wks. Office, Chesapeake, U. S. Naval Weapons Plant, Zone 25, conversion of Bldgs. 153 and 167 to welding and fabricating facility at Naval Weapons Plant. Walter Kidde Engineers, Inc., 140 Cedar St., New York 6, N. Y., consult. engr.-archt. CD 10/28.

▲ **Fla., Clearwater**—SCHOOLS—Pinellas County School Bd., 1960 E. Druid Rd., plans by Archie G. Parish, A1A, Rutland Bldg., Central Ave. and 5 St., St. Petersburg, Belcher Rd. Junior High School, $550,000-$600,000; school, E. Starkey Rd. Cross Bayou, $400,-000; plans by Charles L. Colwell, A1A Times Bldg., 4401 Ave. S. St. Petersburg, Pinellas Park Junior High School, $550,000-$600,000.

▲ **Ga., Decatur**—SCHOOLS—DeKalb Co. Bd. Educ., DeKalb Bldg., plans by Bothwell & Nash, 206 Roswell St., Marietta, elementary school, Midway Area, $400,-000-$450,000. CD 10/9; plans by Gregson & Assocs., Mortgage Guarantee Bldg., Atlanta, elementary school, Sexton Woods Area, $400,000-$450,000; plans by Finch, Alexander Barnes, Rothchild & Paschal, 70 Fairlie St. N.W. Atlanta, elementary school in Tucker Area, $400,000-$450,000.

Ga., Rome—SCHOOL—Floyd Co. Bd. Educ., Courthouse, plans by Bobby J. Toles, 617 Shorter Ave., Floyd County Trade School. $500,000.

▲† **Idaho, Mountain Home**—AIRFIELD APPROACH LIGHTING, etc.—U. S. Eng., City-County Airport, Walla Walla, Wash., airfield approach lighting, missile storage facility, missile assembly bldg., launching complex, road and utilities, Mountain Home Air Force Base, $43,200,000 funds released. CD 3/19.

▲ **Ill., Aurora**—SCHOOL—City, City Hall, voted bonds Oct. 24, school addn. $1,215,000.

▲ **Ill., Chicago**—MEDICAL RESEARCH etc.—Comrs. Cook Co., County Bldg., Zone 2, voted bonds Nov. 3, Hektoen Institute for Medical Research, morgue, 629 S. Wood St., $5,125,000. Cook County Hospital alterations, air-cond., receiving bldg. etc., 1835 W. Harrison St., $750,000; intern dormitory addn., Karl Meyer Hall, $750,000; county morgue rehab., 1828 W. Polk St., $750,000. CD 9/11.

▲ **Ill., Streator**—HIGH SCHOOL—Bd. Educ., $1,998,-000 bond election Nov. 24, high school addn. Bradley & Bradley, 924 N. Main St., Rockford, archts. CD 3/26.

Iowa, Pella—SCHOOL, GYMNASIUM—Bd. Educ. Community School Dist., plans by Savage & Ver Ploeg, 12th and Grand Sts. West, Des Moines, 2 story high school, gymnasium, $700,000.

Iowa, Webster City—SCHOOL—Bd. Directors, Community School Dist., plans by Savage & Ver Ploeg, 12th and Grand Sts., West Des Moines, 1 and 2 story Senior-Junior High School. $965,000. Bids in February. CD 5/28.

La., Shreveport—AUDITORIUM—City, City Hall, voted bonds Oct. 20, auditorium, $600,000. CD 9/30.

La., Shreveport—POLICE AND FIRE STATION—City, City Hall, voted bonds Oct. 20, police and fire station, $650,000. CD 9/30.

Mass., Cheshire—SCHOOL—Town, Bd. Selectmen, plans by Bernhard Dirks, Mohawk Trail, Greenfield, elementary school addn. Approx. $400,000. Constr. 1960.

Mass., Dartmouth—SCHOOL—Town of Dartmouth, Supt. Schools, 366 Slocum Rd., North Dartmouth, plans by Stoner Assoc., 118 Newbury St., Boston, high school alterations, addns. Approx. $400,000. Constr. 1960.

Mass., Mansfield—SCHOOL—Town, Town Hall, plans by Rich & Tucker Assoc., 45 Newbury St., Boston elementary school. Approx. $400,000. Constr. 1960.

▲ **Mich., Erie**—SCHOOL—Bd. Educ., Mason Consolidated School Dist., voted $1,850,000 bonds Oct. 27, high school $2,346,000. CD 10/7.

Minn., Albert Lea—SCHOOL—Bd. Educ., Independent School Dist. No. 241 plans by Haarstick-Lundgren & Assocs., Inc., archt.-consult. engr., N-212 First National Bank Bldg., St. Paul, 3 story, 36,000 sq. ft. and 2 story, 36,900 sq. ft. Central High School addns. $525,000. CD 2/17/56.

Minn., Minneapolis—MILLARD HALL IMPRVS.—Regents of the University of Minnesota, 404 Admin. Bldg., Zone 14, rehabilitating, remodeling Millard Hall, Phase 3. $450,000. Constr. 1960.

Minn., St. Paul—STATE CAPITOL IMPRVS.—State, Dpt. Admin., 19 State Capitol, plans by Ellerbe & Co., 333 Sibley St., state capitol restoration, $675,500, (funds appropriated).

Mo., Affton (St. Louis 23, P.O.)—SCHOOL—Affton School Dist., Bd. Educ., 8309 Mackenzie Rd., Zone 23, voted $657,000 bonds Oct. 27, Intermediate School, Mackenzie Rd. north of Heege Rd. CD 9/24.

▲ **N. J., Cedar Grove**—SCHOOL—Bd. Educ., Cedar Grove Twp., referendum Nov. 24, conversion of Memorial High School into a 4-year high school, $2,255,000; Pompton Ave. School, $495,000. Epple & Seaman, 901 Broad St., Newark, archts. CD 12/6/56.

▲† **N. Y., Brookhaven**—HIGH-FLUX RESEARCH REACTOR—Atomic Energy Comn., 1901 Constitution Ave., N.W., Wash. 25, D. C., 20,000 thermal kw high-flux research reactor, Brookhaven National Laboratory. $10,000,000. AEC is negotiating with the Lummus Co., 385 Madison Ave., New York, N. Y., for engineer-architect services. Curtiss-Wright Research Div., Curtiss-Wright Corp., Quehanna, Pa., will be subcontractor on reactor design. CD 9/17/58.

▲ **N. Y., Brooklyn**—CLASSROOM BLDGS., etc.—Bd. Educ., 45-12 Crescent St., Long Island City, Proj. ES-22 classroom bldgs., $10,000,000; plans by Keally & Patterson, 17 E. 49th St., New York, Zone 19, Proj. ES-22 auditorium and gymnasium, $1,700,-000; TV studio bldg., $488,000; for New York City College of Applied Arts & Sciences, Pearl St.

▲ **N. Y., New York**—HOUSING—New York City Housing Auth., 299 Broadway, Zone 7, plans by Seymour R. Joseph, 1841 Broadway. Borgia Butler Houses, Proj. NYC-84, six 21 story apartments, Park and Webster Aves., East 169th and East 171st Sts., Bronx Boro. $28,000,000. To go ahead 1960. CD 2/28.

▲ **Okla., Bartlesville**—SCHOOL—Bd. Educ. voted bonds Oct. 27, school expansion, $1,200,000. CD 9/25.

▲ **Ore., Eugene**—DORMITORY—Oregon State Bd. Higher Educ., University of Oregon, plans by Church, Newberry, Roehr & Schuette, Builders Exchange Bldg., Portland, Dormitory No. 4, University of Oregon, $1,486,000.

▲ **Pa., Allentown**—HOSPITAL ADDNS.—General State Auth., 18th and Herr Sts., Harrisburg, 3 story masonry admissions, diagnostic and treatment bldg. $2,850,000; addn. to utilities at Allentown State Hospital, incl. boiler plant and electrical distr. system $1,475,000; plumbing, heating and ventilating imprvs. $270,000; 2 story, brick, maintenance shop and garage, $350,000; A. F. Jones, ch. engr., c/o owner, staff engr.

▲ **Pa., Brownsville**—SCHOOL—John A. Brashear Jt. School Dist., secondary school, Proj. 628, $2,750,000.

Pa., Danville—BATH FACILITIES—General State Auth. 18th and Herr Sts., Harrisburg, bath facilities renovation, main block bldg., Danville State Hospital, $437,000. A. F. Jones, c/o owner, ch. engr.

Pa., Denver—SCHOOL—Cocalico Union School Dist., secondary school addn., Proj. 64-6A. $400,000.

Pa., Franklin—SCHOOL—Franklin Area Jt. School Dist., Box 350, elementary school, Proj. 697. $815,000.

▲ **Pa., Greensburg**—SCHOOL—Greater Greensburg Jt. School Dist., secondary school, Proj. 703. $2,000,000.

Pa., Hanover—SCHOOL—Hanover School Dist., Hanover, Proj. 682, Secondary School. $1,500,000.

Pa., Harrisburg—WAREHOUSE—General State Auth., 18 and Herr Sts., warehouse and industrial therapy bldg. for Harrisburg State Hospital. $450,660.

▲ **Pa., Lancaster**—SCHOOL—Lancaster City School Bd., secondary school, Proj. 702. $1,500,000.

Pa., Malvern—SCHOOL—East Whiteland Twp. School Dist., elementary school, Proj. 648. $475,000.

▲ **Pa., Sharon**—SCHOOLS—Sharon School Dist., Sharon, secondary school addn. (Proj. 678), $750,000; secondary school addn. (Proj. 679), $700,000. CD 3/22/56.

Pa., Shippensburg—BUSINESS EDUCATION, etc.—General State Auth., 18 and Herr Sts., Harrisburg, 2 story brick business education and general classroom Shippensburg State Teachers College. $775,000.

▲ **S. C., Rock Hill**—HOSPITAL—Bd. Comrs. York County, Courthouse, plans by Lockwood Greene Engineers, Montgomery Bldg., Spartanburg, 4 story hospital addn. $2,000,000 CD 5/6.

S. C., Walhalla—SCHOOL—Oconee Co. Bd. Educ., Courthouse, plans by Harold Woodward Co., 121 Alabama St., Spartanburg, White High School, $600,000.

▲ **Tex., Eagle Lake**—SCHOOL—Colorado County-Wide-Consolidated School Dist., Eagle Lake, high school in Columbus area, $2,500,000.

Tex., Houston—SCHOOL—Cypress-Fairbanks School Dist., Hempstead Rd., school, admin.-elementary addn., Cypress, $730,000.

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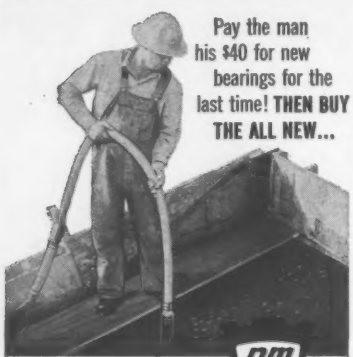
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▲ **Va., Fairfax**—LIBRARIES—Bd. Supervs. Fairfax Co., voted bond referendum Nov. 3, six libraries. $2,000,000. CD 10/19.

Va., Fairfax—POLICE HEADQUARTERS—Bd. Supervs. Fairfax Co., voted bonds Nov. 3, police headquarters. $400,000. CD 10/20.

Va., Fairfax—WAREHOUSE, etc.—Bd. Supervs. Fairfax County, defeated bond referendum Nov. 4, air-conditioning warehouse. $500,000. CD 10/19.

▲ **Va., Williamsburg**—FIELDHOUSE—College of Williams and Mary, 7,000 seating capacity fieldhouse. $2,500,000.

Wash., Cathlamet—SCHOOL—Skamokawa School Dist. 55 to vote Nov. 10, on special levy to complete financing hinh school, for School Dists. 150 and 55, $550,000. CD 7/6.

Wash., Maple Valley—SCHOOL—Tacoma School Dist. 409, plans by E. L. Mills & Assocs., 308 S. Tacoma Ave., Tacoma, Junior High School, $600,000. Bids about Jan. 1.

Wis., Chippewa Falls — INFIRMARY — Chippewa Co., plans by Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, infirmary, $600,000-$700,000.

▲ **Wis., Madison**—CHEMISTRY, etc.—University of Wisconsin, 6 story chemistry, $2,611,500; medical school library, $815,000.

Wis., Superior—CITY HALL, etc.—City, City Hall, city hall, police and fire dpt. $900,000.

Wyo., Worland—SCHOOL—Bd. Educ., 203 N. 15 St., voted bonds Oct. 27, 1 story, 22,000 sq. ft., elementary school. $485,000. Cushing, Terrell & Toohey, 123 S. 7 St., archts. CD 10/9.

Ont., London—LAW SCHOOL—Bd. Governors, Rm. 204 Stevenson Hall, University of Western Ontario, plans by O. Roy Moore Assocs., 260 Dundas St., 2 story, stone, structural steel Law School, University of Western Ontario, Over $400,000. C. D. Carruthers & Wallace, Consultants Ltd., 92 Yorkville Ave., Toronto, consult. engrs CD 1/4/55.

Ont., Richmond Hill—SCHOOL—Richmond Hill, Markham & Vaughan Townships School Bds., plans by Page & Steele, 72 St. Clair Ave. W., Toronto, U shaped 140 x 150 x 250 ft., precast concrete high school. $625,000.

▲ **Que., Granby** — SCHOOL — Catholic School Bd. of Granby, 385 rue Principale, Rue St. Charles Secondary School, recreation hall. $1,000,000.

COMMERCIAL BUILDINGS

Ala., Mountain Brook—CHURCH SANCTUARY—Canterbury Methodist Church 350 Overbrook Rd., plans by Shaw & Renneker, 2201 Arlington Ave., Birmingham, church sanctuary, $800,000.

▲ **Calif., Hollister**—HOSPITAL—San Benito Hospital Dist., c/o Hazel Hawkins Memorial Hospital, 916 Monterey, plans by Stone, Marraccini & Patterson, 536 Mission St., San Francisco, Hazel Hawkins Hospital, Nash Rd. and Airline Hy. $1,000,000.

Calif., Inglewood—HOSPITAL—Centenela Hospital Assn., 935 S. Flower St., plans by Honold & Rex, 9026 Melrose Ave., Los Angeles, 32,000 sq. ft. reinforced masonry hospital addn., 935 S. Flower St. $800,000. CD 8/10/50.

▲ **Calif., King City**—HOSPITAL—King City Hospital, Inc., 624 Broadway, plans by Stone, Marraccini & Patterson, 536 Mission St., San Francisco, 50 bed hospital. $1,000,000. CD 10/29.

▲ **Calif., Los Angeles**—HOSPITAL—Hollywood Presbyterian Hospital, 1322 N. Vermont Ave., plans by Hunter, Benedict, Faxon, Gruys & Sayler, 8440 Melrose Ave., 4 story, 90 x 170 ft. hospital addn., 1322 N. Vermont. $1,400,000.

▲ **Calif., San Francisco**—APARTMENT—Webb & Knapp, 220 Montgomery St., plans by John S. Bolles, 14 Gold St., 30 story, rein. con., steel frame, 350-unit apartment, 1120 Lombard St., incl. 400-car garage, $10,000,000. Chin & Hensolt, 555 Sutter St., consult. engrs. R. E. Audsley, AIA, project archt.

Conn., Branford—SCHOOL—St. Mary's R. C. Church, 115 Main St., plans by Polak & Sullivan, 1397 Chapel St., New Haven, parochial school and convent, Cedar St. $545,000, Hubbard, Lawless & Blakeley, 110 Whitney At., New Haven, consult. engrs. CD 8/6/58.

▲ **Conn., Hartford**—OFFICE—Aetna Life Insurance Co., 151 Farmington Ave., plans by Ebbets, Frid & Prentice, 862 Asylum Ave., 130,000 sq. ft. air-conditioned, brick home office, East Wing Addn. 151 Farmington Ave., $3,375,000. CD 10/21.

Conn., Milford—MOTEL—Stanley Kamykowski, 452 Wheeler's Farms Rd., motel, Wolf Harbor Rd. $400,000.

▲ **Conn., New Haven**—APARTMENT—University Towers, Inc., 270 Park Ave., New York, N. Y., plans by Kahn & Jacobs, 2 Park Ave., New York, N. Y., 16 story apartment, George St., Oak St. Redevelopment Area, $1,750,000.

Conn., Stamford—APARTMENT—31 Strawberry Hill Ave. Corp., c/o Isadore M. Mackler, atty., 41 Bank St., apartment, High Ridge Rd. $400,000.

Conn., West Hartford—DORMITORY, etc.—St. Joseph College, 1678 Asylum Ave., dormitory and faculty residence hall. $500,000.

Conn., West Haven—APARTMENT—University Towers, Inc., 270 Park Ave., New York, N. Y., plans by Kahn & Jacobs, 2 Park Ave., New York, N. Y., 100-unit garden apartment, West Spring St. $500,000. CD 8/8/58.

Fla., Delray Beach—APARTMENTS—Peter Bolger, c/o John Stetson, archt., 249 Peruvian Ave., Palm Beach, 84-unit, 1 story, CB-S Co-Op apartments and swimming pool, Ala. Highway south of here. $500,000.

Fla., St. Petersburg—BANK—Security Federal Savings & Loan Assn., 9 St. N. and 27 Ave., 6 story bank, 9 St. and 27 Ave. $700,000. Bank Building Corp. & Equipment Co., 1130 Hampton, St. Louis, Mo., consult. engrs. CD 7/20.

▲ **Ga., Atlanta**—APARTMENT—Webb & Knapp Corp., 383 Madison Ave., New York, N. Y., plans by Finch, Alexander, Barnes, Rothchild & Paschal, 70 Fairlie St. N. W., apartment, North Ave. at Peachtree St. $4,000,000.

Ga., Atlanta — SHOPPING CENTER — Parker Village Corp., 2581 Piedmont Rd. N.E., plans by Henry H. Jordan, Inc., 2581 Piedmont Rd. N.E., shopping center. $750,000.

Hawaii, Honolulu—HOTEL—Sheraton-Hawaii, Royal Hawaiian Hotel, 9 story, 112 room Royal Hawaiian Hotel Addn. $1,000,000. Constn. May 1960.

▲ **Hawaii, Honolulu**—HOTEL—Sheraton-Hawaii, Royal Hawaiian Hotel, plans by Wimberly & Cook, 315 Royal Hawaiian Ave., 10 story, 210 rooms, Princess Kaiulani Hotel Addn. $2,500,000.

▲ **Ill., Chicago**—HIGH SCHOOL—Catholic Bishop of Chicago, 719 N. Wabash Ave., plans by Fox & Fox, 30 N. LaSalle St., Zone 2, Gordon Technical High School, Addison St. and California Ave., $2,000,000.

▲ **Ill., Chicago**—COLLEGE—Loyola University, 6525 N. Sheridan Rd., College, Stritch Medical School, $7,500,000; hospital (Medical Center), $10,000,000, Ionia Ave. and Carpenter Rd.

▲ **Ill., Joliet**—PARKING BUILDING, etc.—Patrick D. Fahey, c/o Levon Seron, archt., 81 N. Chicago, 5 story parking bldg. with offices, $1,000,000.

▲ **Ill., Peoria**—OFFICE—Briggs Building Corp., 410 S. Main St., plans by C. C. Briggs, 410 S. Main St., 5 story, 77 x 171 ft. office, Jefferson Ave. and Hamilton St., $1,400,000. Bids Spring 1960.

Ind., Gary—SCHOOL—Holy Angels School, 649 Polk St., plans by R. S. Kastendiek, 673 Broadway St., elementary school addns; alterations, $800,000. Bids in Spring 1960.

Kan., Lindsborg—DORMITORY, etc.—Bethany College, Bd. Directors, plans by Geo. W. Tewksbury & Assocs., Suite No. 1, Mission Bank Bldg., Mission, Deere Hall (dormitory for men) addn. and physics educational bldg. $750,000.

▲ **La., New Orleans**—OFFICE—J. J. Mack, c/o Shaw, Metz & Assocs., archts.-consult. engrs., 208 S. LaSalle St., Chicago, Ill., 28 story, 421,000 sq. ft. office, 225 Baronne St. $8,500,000. Bids late in November. CD 11/24/58.

Mass., Cambridge—PARKING STRUCTURE—Massachusetts Institute of Technology, 77 Massachusetts Ave., plans by Parking Assocs., 73 Tremont St., Boston, 4 story steel parking structure. Approx. $400,000. Hamilton & Goody, 258 Main St., consult. archts. Constr. early 1960.

Mass., Fall River—CHURCH—St. William's R. C. Church, c/o Diocese Fall River, Highland Ave., plans by Maginnis & Walsh & Kennedy, 127 Newbury St., Boston, church, $400,000. Constr. 1960.

Mass., Revere—HOSPITAL—Revere Memorial Hospital, 204 Proctor Ave., plans by Harold M. Turiello, 1025 Revere Beach Parkway, hospital addn., alterations, Proctor Ave. Approx. $400,000. Constr. 1960.

▲ **Mass., Sharon**—GOLF CLUB, etc.—Spring Valley Country Club, F. E. Penn, pres., 159 Devonshire St., Boston, golf club; plans by Geoffrey S. Cornish South East St., Amherst, Mass., golf course, $1,000,000. Constr. 1960.

Mass., Waltham—ACADEMIC—Brandeis University, 415 South St., plans by The Architects Collaborative, 63 Brattle St., Cambridge, academic bldg. Approx. $550,000. Constr. 1960.

▲ **Mich., Detroit**—APARTMENTS—Charles W. Babcock, 9341 Chalmers, four 5 story apartments, one 14 story apartment, incl. yacht basin, Jefferson St. $10,000,000.

Minn., St. Paul—SCHOOL—Church of the Nativity, Prior and Stanford Aves., plans by Sperl, Freerks & Dreher, Inc., 1520 St. Clair Ave., 2 story elementary school, $400,000. Bids about January 1960.

Minn., Spring Valley—HOSPITAL—Community Memorial Hospital Assn. plans by M. & G. Buetow, 1931 University Ave., St. Paul, 50-bed hospital, $400,000. Constr. 1960.

Mo., Sikeston—HOSPITAL—Missouri Delta Community Hospital, 41-bed brick, concrete hospital addn. $459,000.

Mo., Webster Groves (St. Louis 19 P. O.)—CHURCH—Holy Redeemer Catholic Parish, c/o Archdiocesan Bldg. Comn., 4396 Lindell Blvd., St. Louis Zone 8, church, Lockwood and Joy Aves. $400,000.

N. H., New London—SCIENCE CENTER—Colby Junior College, New London, plans by E. H. & M. K. Hunter, 37 S. Main St., Hanover, science center, $400,000. Constr. 1960.

N. J., Lakehurst—APARTMENTS—Sam Padula, 302 Maple St., plans by Gerald Joseph Oakley, 35 Liberty Rd., Bergenfield, apartments, on Rte. 70 and Rose St., $500,000. John C. Fellows, Main St., Toms River, consult. engr. CD 9/18.

▲ **N. J., Newark**—HOTEL—Knott Hotels Corp., 575 Madison Ave., New York, N. Y., plans by Ballard, Todd & Snibbe, 123 E. 77 St., New York, N. Y., Robert Treat Hotel addns., Park Place. $6,000,000. CD 9/4/58.

N. J., Oakhurst—SHOPPING CENTER—Sam Padula, 302 Maple St., Lakehurst, plans by G. J. Oakley, 35 Liberty Rd., Bergenfield, shopping center, Rte. 70 Traffic Circle, $400,000. John C. Fellows, Main St., Toms River, consult. engr.

▲ **N. J., Wayne**—SHOPPING CENTER—Schultz Management Corp., 40 Grand Ave., Englewood, plans by Lathrop Douglass, 515 5 Ave., New York, N. Y., 82,000 sq. ft. Preakness Shopping Center addn., Hamburg Turnpike, $1,000,000.

▲ **N. Y., Brooklyn**—HOUSING—Seafarers Housing Foundation, Inc., 675 4th Ave., Zone 32, co-operative housing for 2,000 families on 6 acre site, Division St., Wythe and Kent Aves. $40,000,000.

▲ **N. Y., New York**—APARTMENT—Isaac Prussin, 511 5th Ave., Zone 7, plans by Leo Stillman, 332 E. 149th St., Zone 51, 20 story apartment, 196 East 75th St., $2,000,000.

▲ **N. C., Greensboro**—SHOPPING CENTER—Branch Realty Co., 311 Bellemeade, 100,000 sq. ft. shopping center, 10 acre site, ¼ mi. west of city line. $1,150,000.

N. C., High Point—RESIDENCE HALL—Presbyterian Home, Inc., Greensboro Rd., plans by J. N. Pease & Co., 2925 N. Independence Blvd., Charlotte, residence hall. $750,000.

N. C., Raleigh—OFFICE—State Employees Credit Union, Agriculture Bldg., office, $400,000.

N. C., Winston-Salem—HOSPITAL—North Carolina Baptist Hospital, 300 S. Hawthorne Rd., plans by Larson & Larson, Reynolds Sta., hospital addn. $500 000.

▲ **O., Cleveland**—BANQUET HALL—Sheraton Corp of America, 470 Atlantic Ave., Boston 10, Mass., 2,500 seat banquet hall. $2,000,000.

O., East Liverpool—CHURCH—First Presbyterian Church, plans by Paul Schweikher & J. Nessly Porter, East Liverpool, church, $500,000. CD 1/18/52.

▲ **O., Macedonia**—SHOPPING CENTER—Wargo Realty Co., 9219 Miles, Cleveland, shopping center on 12½ acre site, Rte. 82, Sagamore Hills Twp., near here, $1,600,000.

▲ **R. I. Middletown**—HOUSING DEVELOPMENT—Raytheon Mfg. Co., 179 Thames St., Newport, 150-unit housing development. West Main Rd. and north of Green Lane. $3,750,000. Alonzo B. Reed, Inc., 88 Broad St., Boston, Mass., consult. engr.

R. I., Newport—MAE CADWELL ROVENSKY—Newport Hospital, Friendship St., plans by Harkness & Geddes, 17 Customhouse St., Providence, MAE Cadwell Rovensky Bldg. $500,000. Constr. 1960.

R. I., Providence—NURSERY, etc.—Salvation Army, 758 Westminster St., plans by Harkness & Geddes, 17 Custom House St., day nursery and settlement house Burnside and Miner Sts. $400,000. Constr. 1960.

S. C., Aiken—HOUSING—Aiken Housing Auth., 1029 Pendleton St., plans by Hallman & Weems, 14 Croft Bldg., 60 housing units, $600,000. Jones & Cleckley, 916 Cotton Lane, Augusta, Ga., consult. engrs.

▲ **S. D., Pierre**—HOSPITAL—Benedictine Sisters, plans by Walter J. Dixon, Mitchell, 5 story, brick, concrete, steel St. Mary's Hospital addn. $1,200,000. CD 10/5/49.

▲ **Tex., Dallas**—DWELLINGS—Tynes & Burch Constr. Co., 537 Harvard Drive, 38 dwellings $444,000; 35 dwellings $431,500; 30 dwellings $410,175, NE Dallas. Constr. 1960.

▲ **Tex., Fort Worth**—RESIDENCES—Cassco Land Co., Inc., 3240 Preston Hollow, plans by Preston M. Geren, 1607 Fort Worth National Bank Bldg., 115 residences, Overton West Addn. $3,500,000.

▲ **Tex., Fort Worth** — RESIDENCES — J. D. Cashion Estate, Rte. 12, Box 35 150 brick veneer residences West Lake Addn. $1,500,000. Wm. Glasup, 3232 Crenshaw, Fort Worth, consult. engrs.

▲ **Tex., Fort Worth**—RESIDENCES—H. F. Stute Co., W. T. Waggoner Bldg., 250 brick veneer residences Ryanwood Addn. $4,000,000. Carter & Burgess, 1100 Macon St., consult. engrs.

Tex., Garland—MOTEL—Owner, c/o Kelman-Swinson-Linnstaedter, archts., 5153 Travis St., Dallas, 2 story, 57,120 sq. ft. 56-unit motel, Forest Lane near Shiloh Rd. $475,000. Ed. L. Wilson, 207 Mercantile Commerce Bldg., Dallas, consult. engr.

▲ **Tex., Grand Prairie**—DWELLINGS—Del-Re-Co. Inc., c/o Barney Barnett, 3416 E. Main St., plans by David M. Sweeney, 6748 Patrick St., Dallas, 28 dwellings, $478,000; 24 dwellings, $441,500; 20 dwellings, $400,000; 31 dwellings, $492,225 22 dwellings $406,700; in Schoepler Villa Estates.

▲ **Tex., Grand Prairie**—HOSPITAL—Grand Prairie Hospital, 301 SE 14th St., plans by Smith & Warder, archts.-consult. engrs., 306 NW 2nd St., hospital $1,500,000. CD 2/27/58.

▲ **Tex., Houston**—MOTOR HOTEL—Carrousel Corp., c/o Walter W. Mischer & Assocs., 705 Holmes Rd., plans by Wm. Tamminga & Ralph Miller, 3617 Yoakum St., 110-unit motor hotel, swimming pool, $1,500,000; about 150 units motor hotel, $2,000,000, 8-acre site on Reveille Rd. Karl Krause & Rex Bullock, 2502 Robinhood St., consult. engrs.

▲ **Tex., Houston**—OFFICE—Columbia Gulf Transmission Co., Brazos and Dallas Sts., plans by Pierce & Pierce, 2200 Welch St., Houston, and Douglas W. Orr, assoc. archt., 111 Whitney Ave., New Haven, Conn., 7 story, 79,000 sq. ft. rein.-con., steel office, 3800 block W., Alabama St. $2,250,000. CD 9/24.

Tex., Houston—DWELLINGS—Mallette & Belin Bldg. Corp. and State-Wide Lumber Co., 6700 Lyons St., 27 dwellings, $400,000; 31 dwellings, $410,500, 2nd sec. Crestmont addn.

▲ **Tex., Houston**—SHOPPING CENTER—Edward Rockoff & Phil Rich, 5620 Telephone Rd., plans by W. S. Merliss & Assocs., 2472 Bolsover St., shopping center, $2,000,000; paved shop and auto center areas, $100,-

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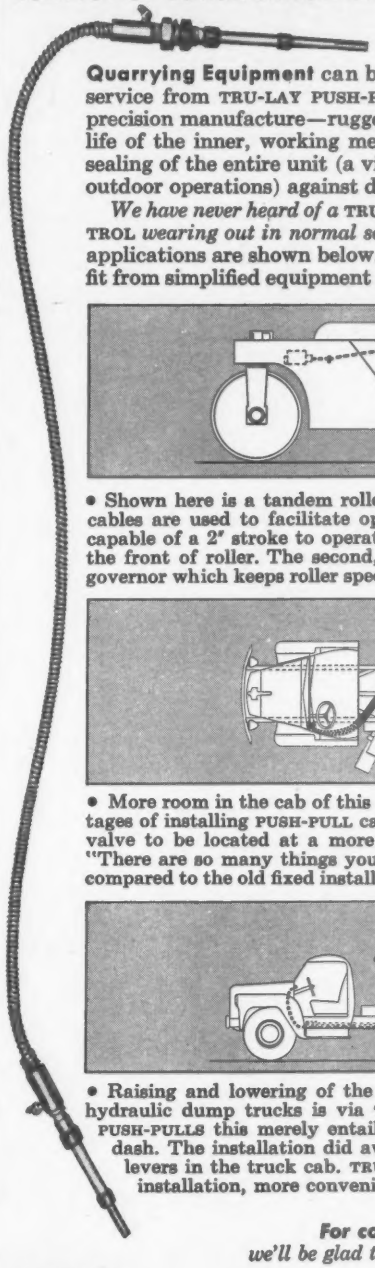

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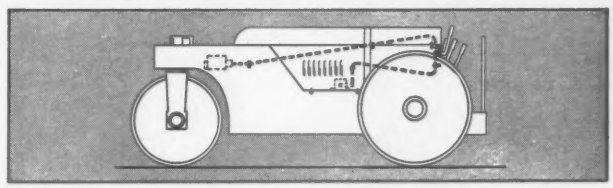
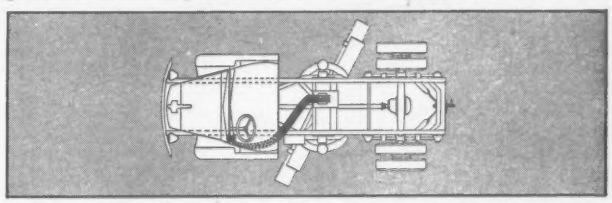
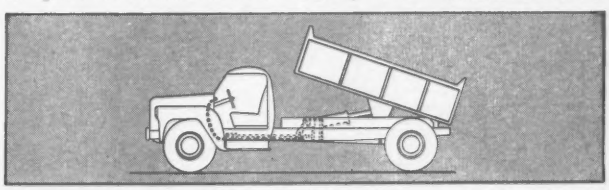


• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156" long, is capable of a 2" stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

For complete information
we'll be glad to send you a copy of ***Bulletin DH-461...***

ACCO

Automotive and Aircraft Division
AMERICAN CHAIN & CABLE

TRADE MARK

601-F Stephenson Bldg., Detroit 2
6800-F East Acco Street, Los Angeles 22 • 929-F Connecticut Ave., Bridgeport 2, Conn.

000; site area earthwork, $60,000, 8½ acres off Telephone Rd. CD 6/8.

Tex., Houston—DWELLINGS—W. R. Romine, 3600 Mangum St., 24 dwellings, $412,350.

▲ **Tex., Llano** — DWELLINGS — Woodrow Wilson & Assocs., Llano, 23 dwellings, $409,000; 32 dwellings $436,350; 28 dwellings, $416,225; 175-acre tract Greenwood Acres, near Lake Buchanan, near here.

Va., Ashland—LIBRARY—Bd. Trustees Randolph Macon College, Ashland, plans by J. Russell Bailey, Orange, library, $430,000. CD 10/15.

Va., Portsmouth — TELEPHONE EXCHANGE — C & P Telephone Co. of Virginia, 7th and Grace Sts., Richmond, telephone exchange, Deep Creek Dist. $719,000.

Va., Richmond—CLUBHOUSE—Boys Club of Richmond, 420 N. Robinson St., clubhouse, $450,000.

Va., Richmond—SCHOOL—St. Catherine's School, 6001 Grove Ave., plans by Baskervil & Son, 2313 W. Cary St., school. $400,000. Hankins & Anderson, 709 W. Grace, consult. engrs.

▲ **Va., Roanoke**—HOSPITAL—Lewis-Gale Hospital, Inc., and Jefferson Hospital, 1313 Franklin Rd. S.W., 400 bed hospital, SW section, $8,000,000.

Va., Roanoke—LIBRARY—Roanoke College Bd. Trustees, plans by Wyatt C. Hedrick, 12th Floor, T. & P. Bldg., P. O. Box 765, Fort Worth, Tex., library, $500,000.

▲ **Wash., Seattle**—INN—Hilton Hotels, 277 Park Ave., New York 17, N. Y., plans by Skidmore, Owings & Merrill, 2040 SW Jefferson St., Portland, Ore., 2 story Hilton Inn, swimming pool, Seattle-Tacoma Airport, $4,000,000. CD 6/4.

Wis., Appleton—HOME FOR AGED—Visiting Nurse Assn. 310 N. Durkee St., plans by F. Shattuck & Assocs., Inc., 174 E. North Water St., Neenah, 1 story, 50-bed Home for Aged, $400,000. CD 1/30/58.

Wis., Green Bay—YWCA—Young Women's Christian Assn., YWCA. $455,000.

Wis., Wausau—HOSPITAL AND NURSES HOME—Sisters of Divine Savior, plans by John J. Flad & Assocs., 2525 University Ave., Madison, hospital and nurses home. $700,000. Bids soon.

▲ **Wis., Whitewater**—HOME FOR AGED—Wisconsin Congregation Conference, Whitewater, Home for Aged, $1,000,000.

▲ **Alta., Calgary**—HOTEL—Canadawide Investments Ltd., Calgary, 200 room hotel. $3,000,000.

B. C., West Vancouver—APARTMENT—West Vancouver Enterprises Ltd., 2368 Bellevue, plans by Alan Gray, Stilwel & Lobban, 325 Howe St., Vancouver 17 story, luxury apartment block, incl. swimming pool, indoor parking. $2,400,000. Amcotts, Sturrock & Assocs., 1161 Melville, Vancouver, consult. engrs. Bids Spring 1960.

Ont., Chatham—Y.M.C.A.—Young Men's Christian Assn. Building Com., 154 McNaughton St. E., Y.M.C.A., $675,000.

▲ **Ont., Toronto (Malton)**—HOTEL—Skyline Hotel Ltd., c/o Basil Capes, archt., 5140 Dundas St W., Toronto, 150 room Airport hotel addn. $1,500,000. Colin H. Copeman, 1117 St. Catherine St. W., Montreal, Que., assoc. archt. S. S. Vozoris, 4195 Dundas St. W., Toronto, Zone 18, consult. engr.

▲ **Que., Cap de la Madeleine**—SHOPPING CENTRE—Century Commercial Building, 326 Bonaventure St., plans by Eliasoph & Berkowitz, 4950 Queen Mary Rd., Montreal, 29 store shopping center, parking grounds, Fusey St. $3,000,000.

▲ **Que., Montreal (Dorval)**—HOTEL—Skyline Hotel Ltd., c/o Basil Capes, archt., 5140 Dundas St. W., Toronto, Ont., 10 story, 250 room Airport Hotel, Cote de Liesse Rd. $1,500,000. Colin H. Copeman, 1117 St. Catherine St. W., assoc. archt. S. S. Vozoris, 4195 Dundas St. W., Toronto, Ont., consult. engr. CD 10/22.

▲ **Que., Quebec City**—SCIENCE FACULTY—Universite de Laval, plans by Lucien Mainguy, 1045 Chaumont Ave., two 4 story, bsmnt. 70 x 630 ft. and 60 x 600 ft. science faculty bldgs., total approx 8,000,000 cu. ft., connected by tunnels and viaducts, Ste. Foy., $15,000,000. Dufresne & Mainguy, 915 rue St. Cyrille W., consult. engrs. CD 1/6.

▲ **Que., Sherbrooke**—SHOPPING CENTER—Yale Enterprises Ltd., 1231 St. Catherine St. W., Montreal, plans by Reuben Fisher, 3177 St. Sulpice Rd., Montreal, shopping center, King St. W. $2,000,000.

▲ **Sask., Regina** — TECHNICAL COLLEGIATE — Regina Collegiate Bd., 1860 Lorne St., plans by Black, Larsen, McMillard & Assocs., archts.-engrs., 3 Black Block. Balfour Technical Collegiate extension, $1,190,000. Bids in December.

INDUSTRIAL BUILDINGS

Calif., Salinas—PLANT—J. M. Smucker, N. Walnut St., Orrville, O., plans by Dalton & Dalton Assocs., The Arcade, Cleveland, O., preserves manufacturing plant. $750,000. CD 10/23.

▲ **Conn., Fairfield**—PLANT—Coca-Cola Bottling Co., 286 Knowlton St., Bridgeport, 66,000 sq. ft. bottling plant, N. Pine Creek Rd. $1,000,000.

▲ **Conn., Southington**—FACTORY—Industrial Enterprises, Inc., Spring St., 8 factory bldgs., Queen St. $1,000,000.

▲ **Fla., Tampa** — WAREHOUSE — Weyerhaeuser Timber Co., Tacoma Bldg., Tacoma, Wash., 30,000 sq. ft. warehouse addn. at container plant. Gibbs & Hill, Wallace S Bldg., consult, engrs.

Ga., Columbus—WAREHOUSE—Bradley Realty & Investment Co., 1018 Front Ave., plans by Pound, Flowers & Dedwylder, 416 12 St., 35,000 sq. ft. warehouse, 10 St. and 9 Ave. $150,000. Armstrong & Edwards, 26 Peachtree Place N. W., Atlanta, consult. engrs.

Ga., Columbus—WAREHOUSE—Owner, c/o E. Oren Smith, 1236 Wildwood Ave., warehouse, 10th Ave. and 6th St. $200,000.

Ill., Decatur—FACTORY—Try Co. Mfg. Co., 1600 N. Calhoun St., 1 story, 80 x 140 ft. sprayer and fertilizer application equipment factory. $112,000.

Ind., Yorktown—WAREHOUSE—Marsh Foodliners, Inc., retail food chain warehouse addn. $500,000.

Mass., New Bedford—GARAGE—R. Udell Thornton, 3500 Acushnet Ave., plans by Erford W. Poole, 4 Chapman Bldg., garage, Tarkiln Hill Rd. $120,000. Bids in November 1959.

Minn., Roseville (P.O. St. Paul)—TERMINAL, etc.—Central Wisconsin Motor Transport Co., 200 Sixth Ave. S.E., Minneapolis, plans by Haarstick-Lundgren & Assocs., N-212 First National Bank Bldg., St. Paul, terminal, incl. 17,000 sq. ft. dock space, 10,000 sq. ft. offices, 5,000 sq. ft. garage, County Rd. C near Hy. 8. $500,000.

Mo., Ava—PLANT—Rawlings Sporting Goods Co., 2300 Delmar Blvd., St. Louis, Zone 3, plans by Ernest P. Ward, 903 E. Walnut St., Springfield, 1 story, 56,000 sq. ft. concrete, brick, steel mfg. plant. $250,000.

N. J., Nixon—PLANT—Cascade Pool Co., 811 Highway 33, Trenton, plant for manufacture swimming pools, Talmadge Rd., Edison Twp. $500,000.

O., Cincinnati—FOUNDRY—Hollaender Mfg. Co., 3841 Spring Grove, foundry, Gracely Dr. $200,000.

O., Cincinnati—PLANT—Lockwood Mfg. Co., 3170 Wasson Rd., plans by Kral-Zepf & Kleine, Ingalls Bldg., 1 story, 16,500 sq. ft. rein.-con., brick bakery equipment plant. $150,000. Bids in November or December.

O., Dayton—WAREHOUSE—Duberstein Iron & Metal Co., 951 Washington, warehouse for scrap material plant, 10 acre site, 1483 S. Euclid Ave. $150,000. Work to start early 1960.

Ore., Portland—TERMINAL—Bend-Portland Truck Service, 1231 SE Water Ave., plans by Josey-Witt-Englund, 1134 SW Market St., truck line terminal, $175,000. Bids soon.

R. I., Lincoln—PLANT—Grant Money-Meters, Div. Universal Controls, Inc., 1117 Douglas Ave., Providence, R. I., plans by Leonard S. Muir, 188 Main St., Pawtucket, industrial plant, Washington and Highway St. at Albion Rd. $450,000. Constr. 1960.

S. C., Charleston — ASSEMBLY PLANT — Republic-Odin Appliance Corp., 4901 S. Boyle St., Los Angeles, Calif., 90,000 sq. ft. water heaters assembly plant. $500,000.

▲ **Tex., Baytown**—PLANT, etc.—Humble Oil & Refining Co., 1216 Main St., Houston, 9,500, bbls. daily cap. hydrofiner lube oil processing plant, $2,500,000; enlarging dewaxing and lube extraction plants, $2,000,000. CD 8/28/58.

Tex., Conroe—PLANT—Montgomery County Industrial Foundation, Conroe, plans by John Corley & Assocs., 308 S. 1st St., 25,100 sq. ft. footings and grade beams, masonry mfg. plant. $175,000. R. J. Speich, 4235 Law St., Houston, consult. engrs.

▲ **Tex., Freeport**—PLANT—Dow Chemical Co., Freeport, enlargement Ammonia Production plant in Ammonia Plants area. $1,200,000. CD 3/12/56.

Tex., Orange—WAREHOUSE—Orange Pulp & Paper Mill, Orange, 50,000 sq. ft. warehouse. $400,000.

Tex., Sheridan—PLANT, etc.—Shell Oil Co., c/o Shell Bldg., Houston, enlargement recycling plant, near here, $800,000; field gathering lines, $175,000. Constr. 1960.

▲ **Va., Big Stone Gap**—PLANTS—Virginia Coal & Iron Co., coal cleaning plant, Taggert Mine, $2,400,000-$3,000,000; coal crushing plant $195,000; Taggert colliery $2,000,000; cleaning plant at Glenbrook Mine $800,000.

▲ **Va., Cheriton**—CANNERY—G. L. Webster Co., Inc., cannery. $1,000,000.

Va., Galax—MILL—Bluemont Knitting Mills, Galax, 2 story, 70,000 sq. ft. mill. $250,000.

▲ **Va., Norfolk**—PLANT—Lone Star Cement Corp., National Bank of Commerce Bldg., cement plant addn. $6,500,000.

Va., Richmond—PLANT—Brenco, Inc., 316 E. Main St., roller bearing plant. $150,000.

Va., Richmond—PLANT—U. S. Filter Corp., 4725 Petersburg Pike, cigarette filter plant, Shell Rd. $150,000.

Va., Smithfield—PLANT—Gwaltney, Inc., plans by Henschien, Everds & Crombie, 59 E. Van Buren, Chicago, Ill., concrete, steel, brick meat packing plant. $900,000. CD 10/19.

Wis., Sheboygan—WAREHOUSE—Schultz Bros., 2215 Union Ave., plans by E. R. Wasserman, 722 Michigan Ave., 25,000 sq. ft., concrete, steel warehouse addn. $250,000. Constr. in Spring.

B. C., Lulu Island—PLANT—Smith Lithograph Co. Ltd., 1695 W. 7th St., Vancouver, plans by Thompson, Berwick & Pratt, 1553 Robson St., Vancouver, 39,000 sq. ft. rein.-con., concrete block lithograph plant, 2 story, 16,000 sq. ft. office and administration. $500,000. Phillips, Barratt & Partners, 2090 W. 4th St., Vancouver, consult. engrs.

B. C., Vancouver—PLANT, etc.—Smith Lithograph Co. Ltd., 1695 W. 7th St., plans by Thompson, Berwick & Pratt, 1553 Robson, 1 and 2 story, steel, concrete, 55,000 sq. ft. plant and office, southeast Fraser St. bridge, $500,000. Philips, Barratt & Partners, 2090 W. 4th Ave., consult. engrs.

UNCLASSIFIED

Calif., Buena Park—SMIMMING POOL—City, City Hall, plans by Harold L. Gimeno, 1400 N. Sycamore St., Santa Ana, municipal swimming pool, La Palma and Knott Aves, $201,000.

Calif., Pacifica—SWIMMING POOL—Ken Royce, c/o Robert M. Sherman, designer, 14 West 41st Ave., San Mateo, U-shaped all-weather swimming pool, near Sea Bowl Bowling Alley. $193,000.

Calif., Palo Alto—STADIUM PRESS BOX—Stanford University, plans by Johnson, Hawley & Assocs., 800 Welch Rd., 2 story, 25,000 sq. ft., steel frame, cement plaster stadium press box. $115,000.

▲ **Calif., Santa Clara**—PARKS—City, City Hall, voted $1,900,000, bonds parks and recreation area development.

▲ **Calif., Santa Clara**—ELECTRICAL SYSTEM—City, City Hall, voted $1,500,000 bonds electrical sys. imprvs. CD 4/17/52.

† **Conn., Groton**—MISSILE TRAINING BLDG.—Dist. P. Wks., Third Naval Dist., 90 Church St., New York, N. Y., plans by Douglas Orr, 111 Whitney Ave., New Haven, 3 story, 15,000 sq. ft., rein.-con. Fleet Ballistics Missile Training Bldg. addn., U. S. Naval Submarine Base, $300,000. Henry A. Pfisterer, 111 Whitney Ave., New Haven, consult. engr. Hubbard, Lawless & Blakeley, 110 Whitney Ave., New Haven, mechanical engrs. CD 10/14.

Conn., Naugatuck—SWIMMING POOL—Town, Town Hall, plans by Sherwood, Mills & Smith, 65 South St., Stamford, swimming pool at high school, $150,000. Hill & Harrigan, 909 Whalley Ave., New Haven, consult. engrs. CD 8/7.

Conn., West Hartford—SWIMMING and WADING POOLS—Town, Town Hall, swimming and wading pools, North End Park, Hyde Rd. $145,000.

▲ **Fla., Clearwater** — STADIUM — Pinellas Co. Stadium Auth., plans by Ford Bacon Davis, 39 Broadway, New York, N. Y., stadium at "Toytown." $2,500,000. Gilbert W. Clifford Assocs., 125A 108 Ave., Treasure Island, consult. engrs. Russell & Axon, 4930 Park Blvd. N., Pinellas Park, engrs.

Fla., Tampa — RAILROAD YARD — Hillsborough County Port Auth., P.O. Box 981, 3,000 car railroad yard, Port Sutton for lease to Atlantic Coast Line R.R. Co. and Seaboard Airline R.R. Co., over $500,000; 22 x 500 ft. long deep water berths for docking facilities Port Sutton, over $500,000. Praeger, Kavanagh & Waterbury, First National Bank Bldg., consult. engrs.

▲ **Ill., Chicago**—DOCKS AND PIERS—City, City Hall, voted bonds Nov. 3, docks and piers, incl. transit shed addn. at Navy Pier, $6,000,000. CD 9/11.

▲ **Ill., Chicago**—LIGHTING—City, City Hall, voted bonds Nov. 3, street lighting, $25,000,000. Lloyd M. Johnson, city engr. CD 9/11.

La., Shreveport—STREET LIGHTING—City, City Hall, voted bonds Oct. 20, street lighting, $100,000. CD 9/30.

La., Shreveport—PLAYGROUNDS, etc.—City, City Hall, voted bonds Oct. 20, parks, playgrounds, recreation, $400,000. CD 9/30.

La., Vinton—RECREATION—City, Ward 7, recreation project, $400,000. J. B. Shipp & Assn., Kaufman Bldg., Lake Charles, consult. engrs.

Mich., Erie—SWIMMING POOL—Bd. Educ. Mason Consolidated School Dist., voted bonds Oct. 27, swimming pool at high school, $175,000. CD 10/8.

▲ **N. C., High Point**—ELECTRIC DISTRIBUTION LINES—City, City Hall, electric distr. lines in newly-annexed areas. $2,200,000.

O., Kent—AUTOMOBILE SPEEDWAY—Denny Adkins, 995 W. Wilbeth Rd., Akron, four track automobile speedway. $400,000. Work to start early 1960.

Pa., Mansfield—ELECTRICAL UNDERGROUND DISTRIBUTION SYSTEM, etc.—General State Auth., 18 and Herr Sts., Harrisburg, electrical underground distr. sys. and utility expansion, Mansfield State Teachers College. $279,500.

† **R. I., Newport**—STEAM FACILITIES IMPRVS.—First Naval Dist., 495 Summer St., Boston, Mass., steam facilities rehabilitation and imprvs.; U. S. Naval Supply Depot, $100,000. J. M. McCusker Assoc., 17 Chestnut Ave., Jamaica Plain, Mass., consult. engrs. CD 9/8/58.

Texas—TELEPHONE CABLES, etc.—Southwestern Bell Telephone Co., 308 S. Akard St., Dallas, 4 to 6 ft. deep in ground telephone cables and conduits, Oak Forest Estates, Oak Park, Forest Oaks, Northeast Park areas, San Antonio, Bexar Co. $288,000. Chas. G. Tarbell, c/o owner, ch. engr.

Tex., Abilene—PARKS—City, c/o Parks & Recreation Bd., City Hall, plans by Tittle & Luther, 542 Butternut St., Will Hair Park imprvs., incl. 3 shelter houses, paving, parking, lighting, $100,000. CD 10/22; Cobb Park imprvs. recreation bldg., playgrounds, etc., $90,000. CD 8/28/58. Jerry Rosser, 133 Leggett St., and Tippett & Gee, 1333 N. 2nd St., consult. engrs.

Tex., Houston—STADIUM—Bud Adams, c/o Adams Petroleum Center Westheimer Rd., remodeling, imprv. Jeppesen Stadium for Big League Baseball, $250,000.

▲ **Va., Fairfax** — PARKS AND RECREATION — Bd. Supervs. Fairfax Co., Voted bond referendum Nov. 3, parks and recreation, $4,800,000. CD 10/19.

Wash., Othello—SWIMMING POOL—City, City Hall, voted $110,000 bonds Oct. 27, 50 x 120 ft. swimming pool. CD 10/8.

Your top money-maker for moving big yardages

28-YD
360-HP
30-MPH

B TOURNAPULL®

...many proven operating advantages

For moving big yardages fast... 28

These proven advantages make B 'Pull your top money-maker*

Loads Faster ... Cutting edge of low, wide B Fullpak® scraper enters ground at 1° cutting angle. Dirt flows into bowl horizontally, with minimum lifting resistance, rolls against curved tailgate and boils forward to fill all corners of bowl and apron. Field weight-tests prove that "B" consistently carries a greater percentage of rated capacity than any other scraper in its size class.

Hauls Faster ... B 'Pull has the advantage of 10 forward speeds, to 30.2 mph. It has a maximum rimpull of 59,791 lbs. Exclusive power-transfer differential boosts production in soft going.

Spreads Faster ... With "B's" positive electric power applied to direct-action tailgate, dirt is forced out of bowl in even, low-void lifts. A single pass of the tailgate clears the bowl of even the stickiest material, avoids "carrybacks".

Operates Easier ... Exclusive electric controls on LW Tournapulls provide fingertip ease of operation, place power at points of action, cut friction loss, reduce downtime and maintenance. Dependable electric motors work at top efficiency in any kind of weather.

Your top money-maker for moving big yardages ... On job after job, owners agree that today's B Tournapull is out-front in production earthmoving:

From Illinois ... "B 'Pulls finish jobs faster, at less cost, than any other earthmovers we've ever used."

From Ohio ... "B 'Pulls are easy loading, fast dumping, have plenty of power for the big jobs."

From Oregon ... "The 'B' is a well-built machine, with capacity and speed needed to make long hauls pay off."

From North Dakota ... "The 'B' just can't be beat!"

If your contracts involve big yardages, compare advantages of B 'Pull with your present equipment. See why this machine is called "top money-maker" in the big scraper field.

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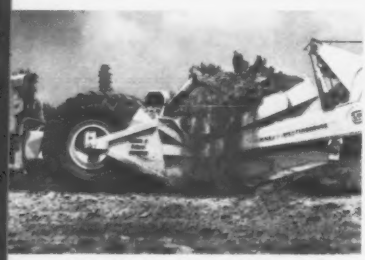

Husky push-block on the B 'Pull is positioned low, with power-thrust in direct line from pusher to blade. This means better pusher contact, for faster, easier loading ... with minimum pusher effort.

Improved electric kingpin steer enables "B" to make 90° turns right-or-left at any speed desired. Big machine turns around in only 39'10". In extremely soft going, operator can pivot prime-mover easily from side-to-side, to "walk" the drive-wheels onto solid footing ... a superior traction advantage of B 'Pull.

Operator sits high on "B" prime-mover, with clear view of scraper, load, and pusher. With fingertip electric controls he handles all movements of bowl, apron, and tailgate. He works relaxed ... concentrates on getting big loads *fast* ... in even the toughest conditions.

Ask your LW Distributor for all the facts

...28 yd

B TOURNAPULL

B Tournapull moves more dirt at lower net-cost-per-yard than any other earthmover

You're in business for more profit with a full "B-size" fleet

Interchange B FULLPAK scraper for B REAR-DUMP when you hit rock. Same efficient prime-mover powers both.

Speed your scattered bulldozing, cut compaction costs . . . with heavy-duty 218-hp rubber-tired TOURNATRACTOR®.

YOUR LW DISTRIBUTOR IS A GOOD MAN TO KNOW

Spread fill, keep haul roads smooth and fast, cut ditches, slope banks, with 190-hp POWER-Flow® 660 grader.

To speed-up your off-road hauling on steep grades, and in tight places, use 27 or 32-ton LW HAULPAK® trucks.

YOU CAN DEPEND ON PRODUCTS BY LW . . . WHERE QUALITY IS A HABIT

The Future is bright for earthmovers!

Soon . . . the Interstate Highway program will again be in high gear . . . soil conservation and watershed programs are expanding . . . building construction is increasing . . . and more money for these major developments is being made available. In all of these areas of business activity the general index is "up", and the opportunity for earthmoving contractors looks *good.*

The opportunity for contractors owning LW earthmoving equipment is especially good. Production records prove, beyond doubt, that LW Tournapulls consistently deliver dirt at the lowest net-cost-per-yd. And the same is true of LW graders, trucks, and tractors. To convince yourself of this fact, talk to LW equipment owners. Ask them for comparative figures on production, downtime, maintenance. *Get the facts,* then talk to your LW Distributor about trade-ins.

Your LeTourneau-Westinghouse Distributor understands the problems and needs of earthmoving contractors, and the benefit of his broad experience is yours for the asking. His organization of factory-trained mechanics is available at all times to help keep your equipment operating at top efficiency, and he stocks factory-built parts to meet all emergencies. It's a good time *now* to evaluate your equipment and modernize with high-production LW machines. See your LeTourneau-Westinghouse Distributor *soon.*

LeTOURNEAU-WESTINGHOUSE COMPANY
PEORIA, ILLINOIS
A Subsidiary of Westinghouse Air Brake Company

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LA-2211-DC-4

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 23 Connecticut November 24 Massachusetts

BUILDINGS—BA

▲ **Mass., Pittsfield**—HOUSING FOR THE ELDERLY—BA 11/27—City Housing Auth., 174 Mohegan St., separate or combined bids, State Aided Housing Proj. 667-1, housing for the elderly, two sites, Proj. 667-1A and 667-1B, Wahconah St. and Francis Ave. $1,000,000. Plans deposit $25. Prentice Bradley, 74 North St., archts. CD 5/6.

Mass., Westfield — HOUSING FOR THE ELDERLY — BA 11/30—City Housing Auth., City Hall, SA 667-1, housing for the elderly. $550,000. Extended date. Caolo Assocs., 57 Pearl St., Springfield, archts.-engrs. CD 11/11.

▲ **R. I., Middletown**—SCHOOL—BA 12/8—Town, School Comn., Green End Ave. and Valley Rd., Junior-Senior High School, off Valley Rd. $1,500,000-$1,750,000. Plans deposit $150. MacConnell & Walker, 3308 Post Rd., Warwick, archts. CD 1/29.

N. H., Portsmouth — SCHOOL — BA 12/10 — City, 126 Daniel St., elementary school, Elwyn Park, Van Buren Ave. $410,000. Extended date. Alfred T. Granger Assoc., Granger Circle, Hanover, archts. CD 9/30.

▲ **Mass., Walpole**—SCHOOL—BA 12/15—Town, Stone St., Junior High School, East and Washington Sts. $1,890,000. Plans deposit $50. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, archts. CD 10/1/58.

▲ **Conn., Burlington** — SCHOOL — BA 12/16 — Regional School Dist. No. 10, Consolidated School Bldg., Unionville, Regional Junior-Senior High School, Lyons Rd. for Towns of Burlington and Harwinton. $1,500,000. Moore & Salsbury, 1007 Farmington Ave., West Hartford, archts. Marchant & Minges, 1007 Farmington Ave., West Hartford, engrs. CD 9/18/58.

▲† **Conn., Groton** — HOUSING — BA 12/22 — Dist. P. Wks., Third Naval Dist., 90 Church St., New York, N. Y., 500-unit Capehart Housing Submarine Base, $8,000,000. Kane & Fairchilds, 734 Asylum Ave., Hartford, archts. CD 10/14.

HEAVY CONSTRUCTION—LB & CA

CONNECTICUT—State Hy. Comr., 170 Douglas St., Hartford, Bids opened 11/9,

Enfield Road Constr. Co., Inc., P. O. Box 368, Thompsonville, Conn., LB $704,748, (8 bidders), hot b. conc. 25,513 lin. ft. pavement Northfield Rd., Fed. Aid Proj. S 74(2), Proj. 73-88, Litchfield. CD 10/28.

Adams Erickson Co., Inc., 45 E. Putnam Ave., Greenwich, Conn., CA $204,771, park shed and sanitary facilities for Island Beach Ferry, Arch St., Grass Island, GREENWICH, CONN. Town, Town Hall, Greenwich, Conn. Bids Oct. 8, awarded Nov. 9. CD 10/20, under LB.

BUILDINGS—LB & CA

▲ **J. R. Cianchette & Sons, Inc.**, Union St., Bangor, Me., Separate Contracts, Approx. $1,400,000, SHOPPING CENTER, BANGOR, ME. Henneberg & Henneberg, 42 Mt. Auburn St., Cambridge, Mass., archts.

Merrimack Homes, Inc., 654 Gorham, Lowell, Mass., CA Approx., $400,000, 20 HOUSES "Jupiter Hill", Westford St., CHELMSFORD, MASS. Martin Cerel Co., 18 East Central St., Natick, Mass.

Martin Cerel Co., 18 E. Central St., Natick, Mass., Separate Contracts, Approx. $428,000, 20 HOUSES, "Sudbury Pines" Horse Pond Rd., SUDBURY, MASS.

Fielding Corp., Brook St., Reading, Mass., Separate Contracts, Approx. $400,000, (third section), 22 HOUSES "Fielding Manor" near Jct. Rtes. 1 & 128, WAKEFIELD, MASS.

Lantern Corp., A. J. Moreno, 37 Bientyre Rd., Malden, Mass., Separate Contracts, Approx., $414,000, (second section), 26 HOUSES "Meadow Farms" off Brown St., WEST CONCORD, MASS.

Joseph Stivaletta & Sons, 505 High St., Westwood, Mass., CA Approx., $420,000, 14 HOUSES "Green Mountain Park", Canton St., WESTWOOD, MASS. Owner, c/o contractor.

Mrosek & Bray, 923 Main St., Manchester, Conn., Owner Builds, $440,000, 44 HOUSES, Depot St., EAST WINDSOR, CONN.

Lillian Feldman, 9 Taylor Drive, Norwich, Conn., Owner Builds, $420,000, 42 HOUSES, Scotland Rd., NORWICH, CONN.

▲ **Arthur Primus**, Bristol Rd., Waterbury, Conn., Owner Builds, $1,500,000, 150 HOUSES, Camp St., PLAINVILLE, CONN. CD 9/10.

Donald P. Boas, Et. Al., Nod Hill Rd., Wilton, Conn., Owner Builds, $430,000, 43 HOUSES, Partrick Lane, WILTON, CONN.

William J. Lyons Constr. Co., Inc., 2 Wilton Ave., Norwalk, Conn., CA $405,000, 2 story, red brick facing, colonial style trim, air-conditioned BUSINESS BLDG., Old Ridgefield Rd., WILTON, CONN. Road Island Co., Wolfpit Rd., Wilton, Conn. Stockman & Martin, New Canaan, Conn., archts. Awarded Nov. 10. CD 6/10.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
November 25 Pennsylvania
STREETS AND ROADS
November 24 Maryland November 25 Pennsylvania
November 29 New Jersey

▲ **Pa., Reading**—BA 12/16—Muhlenberg Twp. Auth., 2840 Kutztown Rd., Hyde Park, Reading, sewerage sys. Part A, consisting of all sewers, appurtenances to be constr. to serve areas known as Hyde Park, College Heights and Wedgewood Heights; (Part B) consisting of all sewers, appurtenances to be constr. to serve areas known as Cherokee Ranch, South Temple, Hyde Crest, Muhlenberg Park, and section Riverview Park. Contract 2, general constr. sewage pumping and ejector stations, Plans deposit $30; Contract 3, plumbing work in connection with sewerage proj., Plans deposit $25; Contract 4, heating work in connection with sewerage proj., Plans deposit $25; Contract 5, electrical work in connection with sewerage proj., Plans deposit $25. Gannett Fleming Corddry & Carpenter, Inc., 600 N. 2nd St., Harrisburg, engr.

BUILDINGS—BA

N. J., Penns Grove—SCHOOL—BA 11/23—Penns Grove-Upper Penns Neck School Dist., Penns Grove, high school addns., alterations, $437,886. The Ballinger Co., 1625 Race St., Phila., Pa., archt.-engr.

Pa., Plumsteadville—SCHOOL — BA 11/24—Plumstead Twp. School Dist., elementary school, Pipersville, $400,000. Plans deposit $25. Stephen B. Hazzard, Warrington, archt. CD 5/18.

▲ **Pa., Foxcroft**—MENTAL HEALTH CENTER—BA 12/2—General State Auth., 18th and Herr Sts., Harrisburg, Haverford Mental Health Center, State Mental Hospital, Haverford Twp. (P. O. Havertown). $14,500,000. Plans deposit $200. Extended date. Mental Hospital Associates, 1608 Fox Bldg., Phila., archts.-engrs. CD 9/23.

▲ **N. Y., Dobbs Ferry**—PROVINCIAL HOUSE, etc.—BA 12/9—Archdiocesan Bldg. Comn., 451 Madison Ave., New York, Zone 22, (selected list bidders) Mount Mercy College Project: provincial house, mother house, college bldg. and Our Lady of Victory Academy. $5,000,000. Kiff, Colean, Voss & Souder, Office of York & Sawyer, 101 Park Ave., New York, Zone 17, archts. CD 5/28.

▲† **N. Y., Brooklyn**—COURT HOUSE, etc.—BA 12/22—General Services Admin., P. Bldgs. Service, Region 2, Business Service Center, 250 Hudson St., New York, Zone 13, 7 story, ground floor, bsmnt. court house and 4 story federal office bldg., steel, concrete beams and girders, limestone and granite, rein.-con. fdns., united by common entrance lobby, Washington, Tillery and Adams Sts., Proj. No. 30904, Appr. No. 47x1147. $15,000,000. Plans deposit $150 each set. Carson & Lundin, 19 W. 57th St., New York, Zone 19, archts.-engrs. CD 2/18/58.

BUILDINGS—SLC

N. J., Erlton—RESTAURANT and NIGHT CLUB—Sabatino & Fishman, archts., 116 S. 19 St., Phila., Pa., soon lets contract restaurant and night club, for Latin Casino, 1309 Walnut St., Phila., Pa. Over $400,000. Benjamin Belnin, 116 S. 19 St., Phila., Pa., engr.

HEAVY CONSTRUCTION—LB & CA

▲† **U. S. Eng.**, 111 E. 16th St., New York 3, N. Y., cancelled bids to have been opened Nov. 10, excav. SAGE-SCC, deep underground facilities, Whitehorse Mountain, IFB ENG-30-075-60-36, CORNWALL, N. Y. CD 10/30.

Lopez Constr Co., 4912 49 Ave., Edmonston, Md., CA $935,814, Slash run relief sewers "L" St. N.W. between 22 St. and Connecticut Ave., WASH., D. C. D. C. Govt., Dpt. Sanitary Engineering, 499 Pa. Ave. N.W., Wash., D. C. Bids Sept. 29 Awarded Nov. 6. CD 10/5.

▲† **McCloskey Co.**, 1620 W. Thompson St., Phila., Pa., CA $1,474,000, underground terminal for subway system linking capitol with new and old Senate office bldgs., WASH., D. C. Office of The Architect, U. S. Capitol, Wash., D. C. CD 11/6, under LB.

BUILDINGS—LB & CA

Hallmark Village Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $900,000, 50 HOUSES, Deer Park Ave. south of Southern Parkway, BABYLON, N. Y.

▲ **William Liebfried Inc.**, 45-24 Pearson St., Long Island City, N. Y., CA Est. $1,200,000, 750,000 sq. ft. rein.-con. HOSPITAL conversion, alterations, BAYVILLE, N. Y. Oyster Bay Hospital, Bayville Ave., Bayville, N. Y. Bids July 27. CD 7/22.

Jo Ann Homes, c/o John J. Braglia, 169 Old Country Rd., Hicksville, N. Y., Owner Builds, $475,000, 25 HOUSES, Schoolhouse Rd., BETHPAGE, N. Y.

Mainl Manor Homes, c/o Farmingdale Realty Co., 180 C Merritt Rd., Farmingdale, N. Y., Owner Builds, $800,000, 40 HOUSES, Stewart Ave. south of Northern State Parkway, BETHPAGE, N. Y.

Stonebridge At The Lake Homes, c/o A. H. Salkowitz, archt., 87-25 Homelawn St., Jamaica 32, N. Y., Owner Builds, $500,000, 10 HOUSES, Lakeville Rd. south of Northern State Parkway, LAKE SUCCESS, N. Y.

Planet Constr. Corp., 11 West 42nd St., New York 36, N. Y., LB $983,000, (20 bidders), general contract PUBLIC PARKING GARAGE, Jerome Ave. and E. 190th St., Bronx Boro, NEW YORK, N. Y. Dpt. P. Wks., Rm. 1800L, Municipal Bldg., New York 7, N. Y. Bids Nov. 10. CD 10/15.

Madison Homes, c/o Acre Realty Co., 2664 Long Beach Rd., Oceanside, N. Y., Owner Builds, $400,000, 25 HOUSES, Riverside Drive, OCEANSIDE, N. Y.

Hillview Gardens Homes, c/o J. Albert Gleeson, Inc., 1235 Yonkers Ave., Yonkers, N. Y., Owner Builds, $560,000, 20 HOUSES, Washington Ave., PLEASANTVILLE, N. Y.

Heathcote Homes, c/o Wesco Realty Co., 1004 Boston Post Rd., Rye, N. Y., Owner Builds, $450,000, 15 HOUSES, King St., RYE, N. Y.

Kenwood Estates, c/o Butterly & Green, 168-25 Hillside Ave., Jamaica, N. Y., Owner Builds, $425,000, 25 HOUSES, South Seamen's Neck Rd., south of Merrick Rd., SEAFORD, N. Y.

Elegante Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $450,000, 15 HOUSES, Brookfield Rd. and Park Lane, NORTH WOODMERE, N. Y.

Sutton Park Homes, c/o Lane Realty Co., 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $520,000, 20 HOUSES, Park Lane, near Brookfield Rd., WOODMERE, N. Y.

Joseph Cook, Sandy Hill Rd., Chatham, N. J., Owner Builds, $450,000, 17 HOUSES, 3rd section, Vauxhall Rd., UNION, N. J. Stephen Potter, 410 Colonial Ave., Union, N. J., archt.

Frank DePietro & Julio Mastibattista, Crestview Dr., Bernardsville. N. J., Owner Builds, $400,000, SHOPPING CENTER, Rte. 10, WHIPPANY, N. J. Winthrop Jones, Rte. 202, Bernardsville, N. J., archt. CD 7/9/58, under William Fritze, as owner.

Costello Bros., Whitemarsh, Pa., CA $486,000, RESIDENTIAL DEVELOPMENT (18), Williamsburg Development, BLUE BELL, PA. Calamar Corp., c/o general contractor.

Malfran Corp., 1411 City Line Ave., Phila., Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Colonial Rd., etc., HAVERTOWN, PA.

Kenneth Grosse, Lansdale, Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Church Rd., etc., HILLTOWN, PA.

S. F. Pancoast, Springfield, Pa., CA $630,000, RESIDENTIAL DEVELOPMENT (21), Media Line Rd., NEWTOWN SQUARE, PA. Owner, c/o Russell E. Miller Co., Clifton Heights, Pa.

▲ **H. Fishman & Sons, Inc.**, 1901 Devereaux St., Phila., Pa., Separate Contracts, $10,000,000. RESIDENTIAL DEVELOPMENT (700 homes), Morrell Tract, Frankford Ave., PHILA., PA.

Glenview Homes, 6233 Frankford Ave., Phila., Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Fairdale Rd., etc., PHILA., PA. Lewis J. Cowan, 1505 Pine St., Phila., Pa., archt.

Nason & Cullen, Inc., 6522 Vine St., Phila., Pa., CA $491,457, TRUCK TERMINAL and GARAGE, PHILA., PA. Eastern Express, Inc., 129 Cherry St., Terre Haute, Ind. Homer Howe, Opera House Bldg., Terre Haute, Ind., engr. Bids Oct. 16. CD 10/3.

John S. McQuade Co., 1322 Parrish St., Phila., Pa., CA $400,000, EDUCATIONAL BLDG., WAYNE, PA. Wayne Presbyterian Church, Wayne, Pa. CD 3/30.

Scott Bros., Wayne, Pa., CA Over $500,000, RESIDENTIAL DEVELOPMENT, Upper Gulph Rd., etc., WAYNE, PA. Owner, c/o Conlin & Brinker, Strafford, Pa.

Alex G. C. Duncan, Paoli, Pa., Separate Contracts, $792,000, RESIDENTIAL DEVELOPMENT (32), Singe Homes, White Horse Rd., etc., WILLISTOWN, PA.

Joseph E. Palmer, Paoli, Pa., Separate Contracts, $400,000, RESIDENTIAL DEVELOPMENT, Cheywynd Rd., etc., WILLISTOWN, PA.

John E. Healy & Sons, Inc., 707 Tatnall St., Wilmington, Del., CA $800,000, MFG. PLANT, WILMINGTON, DEL. Electric Hose & Rubber Co., 12 and Dure Sts., Wilmington, Del. CD 9/16.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
December 1 Kentucky

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Va. Dpt. Hys., 1221 E. Broad St., Richmond, Bids opened 11/10,

Va.—**Virginia Stone & Constr. Corp.**, 325 Campbell Ave., Roanoke, Va., LB $2,125,594, (13 bidders), 2.21 mi. 2 lanes 24 ft. x 9 in. b. conc. from Potomac River south of Cabin John, Md. to 1.54 mi. north of Rte. 123 near Old Dominion Dr. Rte. 413, State Proj. 0413-029-007,C7, Fed. Proj. I-495-5 (8) 189, Fairfax Co.; LB $106,370, (6 bidders), 3.126 mi. 18 ft. x 8 in. aggreg. base road from Rte. 736 north of Hebron toward Bowlers Ferry Rte. 736 north Hebron toward Bowlers Ferry Rte. 635, State Proj. 0635-017-103, Fed. Proj. S-1074 (1), Carroll Co.;

Va.—**Adams Constr Co.**, 2725 Roanoke Ave. S.W., Roanoke, Va., LB $134,438.74 (4 bidders), grade, aggreg. bit. surf. treat. road. bridge over South Fork Reed Creek near Groseclose from U.S. 11 E. of Rural Retreat to Crockett Rte. 625, State Proj. 0625-098-016, etc., Wythe Co.;

Va.—**Roy N. Ford**, 814 Riverside Dr., Danville, Va., LB $129,491, (17 bidders), grade, drain parallel lanes to divided from 4.5 mi. west of Danville City limits thru Brosville to 4.3 mi. east of Henry Co. Line Rte. 58, State Proj. 0058-071-020, Fed. Proj. F-024-2 (8), Pittsylvania Co.;

Va.—**Ames & Webb, Inc.**, 3145 Virginia Beach Blvd., Norfolk, Va., LB $134,834, (3 bidders), grade, 22 ft. x 7½ in. b. conc. bit. top from end of recently completed proj. east of Rte. 166 to 0.17 mi. west of Lynhaven Inlet Bridge, Rte. 60, State Proj. 0060-075-011, C1-014, C1, Fed. Proj. F-037-1(4), Princess Anne Co.;

Va.—**Appalachian Constr. Co., Inc.**, Wise, Va., LB $448,798, (10 bidders), 1.244 mi. divided hy., 22 ft. x 5½ in. b. conc. from 1.2 mi. south of Rte. 83 at Vansant to 2.45 mi. south of Rte. 83, Rte. 460, State Proj. 0460-013-101,C1, Fed. Proj. F-022-1 (11), Buchanan Co. CD 10/20.

J. W. Conner & Son, 3916 East 8 Ave., Tampa, Fla., LB $724,000, Sligh Ave. widening to 44 ft. and installing storm sewers east from bridge to Nebraska Ave., west from bridge to Armenia Ave. and 2 mi. sidewalks, TAMPA, FLA. City, City Hall, Tampa, Fla.

BUILDINGS—LB & CA

▲ **W. L. Weaver Constr. Corp.**, 214 W. Gaston St., Greensboro, N. C., CA Est. $1,000,000, SHOPPING CENTER, northern outskirts of town, DANVILLE, VA. Weaver Realty Co., 214 W. Gaston St., Greensboro, N. C. CD 11/11.

M. E. Howard Constr. Co., 710 Dawn St., Richmond, Va., CA $400,000, SUPERMARKET, Crestview, RICHMOND, VA. Lane Realty Corp., 6500 Horsepen Rd., Richmond, Va. Awarded Nov. 3.

King-Hunter, Inc., 1421 Westover Terrace, Greensboro, N. C., LB $784,376, general contract HOSPITAL, BURLINGTON, N. C. Memorial Hospital of Alamance Co., Alamance General Hospital, 1308 Rainey St., Burlington, N. C. Bids Nov. 5. CD 10/15.

Elmo Sellars, 1057 Battleground Ave., Greensboro, N. C., Own Forces, $500,000, 40 RESIDENCES, Fairwood Forest Subdivision, GREENSBORO, N. C.

Bonner Bros., 1931 Bonner St., Decatur, Ga., Own Forces, $450,000, 38 RESIDENCES, Delphine Drive, DECATUR, GA.

Riverside Hills, Inc., Atlamanda Ave. and 82 St., Tampa, Fla., Owner Builds, $868,000, 96 DWELLINGS, TAMPA, FLA.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 1, 8, 15 Ohio

STREETS AND ROADS

December 1, 8, 15 Ohio

HEAVY CONSTRUCTION—LB & CA

▲ **INDIANA**—State Hy. Dpt., State House Annex, Indianapolis,

Contracting & Material Co., 7150 E. Washington St., Indianapolis, Ind., CA $1,705,758, rein.-con. pavement, Contr. R-4651, Hendricks and Marion Counties. Bids May 28. CD 6/8, under LB.

Campbell, Lowrie & Lautermilch, 400 W. Madison St., Chicago 6, Ill., CA $700,000, stadium and 200,000 gal. concrete water tank for marine animals, BROOKFIELD, ILL. Chicago Zoological Park, Inc., Brookfield, Ill. Olsen & Urbain, 5 S. Wabash Ave., Chicago 3, Ill., archts. Awarded Nov. 1.

Santucci Constr. Co., 5025 Church St., Skokie, Ill., CA $623,209, Contract 12C, Upper DesPlaines sanitary interceptor sewer, CHICAGO, ILL. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St., Chicago, Ill. Bids Oct. 15, awarded Nov. 6. CD 10/22, under LB.

BUILDINGS—LB & CA

King Packer Builders, 6085 State Rd., Cleveland 34, O. Own Forces, $750,000, 30 HOMES, Royal Ridge Dr., PARMA, O.

George Cassidy & Sons, 5125 W. Division St., Chicago, Ill., CA $525,600, Dundee HIGH SCHOOL addn., CARPENTERSVILLE, ILL. School Dist. 300, Cleveland Ave., Carpentersville, Ill. Bradley & Bradley, 924 N. Main St., Rockford, Ill., archts. Bids Oct. 30. CD 2/18/54.

▲ **Kaiser-Ducett Corp.**, 80 E. Jackson, Chicago 4, Ill., CA $2,500,000, 1 story, 200,000 ft., brick WAREHOUSE, corner North and Grand Aves., NORTH LAKE, ILL. General Foods Corp., 250 Park Ave., New York, N. Y. Dunlap & Esgar, Inc., 333 N. Michigan, Chicago, Ill., archt. Awarded Oct. 27.

O. E. Madsen & Son, Sexton Bldg., Minneapolis, Minn., LB $534,800, general contract SHOP BLDG., MENOMONIE, WIS. Bd. of Regents of State Colleges, Madison, Wis. Bids Nov. 5. CD 10/7.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 1 Oklahoma December 15, 16 Texas

STREETS AND ROADS

December 1 Oklahoma December 15, 16 Texas

† **Texas**—BA 12/1—U. S. Eng., Rm. 721, Santa Fe Bldg., Galveston, dredging 400,000 cu. yd. Gulf Intracoastal Waterway, modified route main channel from Aransas Pass Channel to Ransom Island Channel, Aransas Pass Area, Nueces Co. Over $400,000. CD 9/30.

BUILDINGS—BA

Tex., Texas City—DWELLINGS—BA 12/2—City Housing Auth., 40-unit brick veneer dwellings. $400,000. Plans deposit $25. Wyatt C. Hedrick Co., P.O. Box 1133, Houston, archts. CD 1/15.

▲ **Mo., Moberly**—MEDIUM SECURITY PRISON, etc.—BA 12/22—Missouri Bd. P. Bldgs., 100 State Capitol, Jefferson City, medium security prison, incl. twin 2-story dormitories, chapel, auditorium and recreation center, vocational and industrial shops, educational center, power house, warden's residence and five residences for personnel. $8,000,000. Plans deposit $500 for prison and $25 for staff housing. Extended date. Marcel Boulicault, 411 N. 7th St., St. Louis, Zone 1, archt. Curtin & Davis, 2475 Canal St., New Orleans, La., consult. archts. CD 11/2.

BUILDINGS—SLC

Mo., North Kansas City—WAREHOUSE, etc.—Jesco Lubricant Co., c/o Folger & Pearson, archts., 1009 Baltimore Ave., Kansas City, Mo., soon lets contract 2 story, 70 x 116 ft. concrete block, brick warehouse and office addn. incl. grease bldg. addn. Over $400,000.

Tex., Houston—INSTITUTE OF RELIGION—Texas Theological Seminaries, c/o Eddy C. Scurlock, 3663 Del Monte St., soon lets general contract 4 story, bsmnt. with tower, 19,000 sq. ft. brick exterior, steel frame, air-conditioned, etc. Institute of Religion. $600,000. John Freeman, Jr., 1700 Main St., archt. I. A. Naman & Assocs., 3305 Montrose, and Walter P. Moore, 2 Pinedale St., engrs. CD 10/23.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., Capitol Approach, St. Paul,

Ashbach Constr. Co., 1910 W. County Road C, St. Paul, Minn., CA $1,778,377, grade, pumping stations, base, concrete pavt. and bridges 3.2 mi., Clay Co. Bids Oct. 16. CD 10/21, under LB.

† **Massman Constr. Co.**, 3917 Broadway, Kansas City 11, Mo., LB $457,760, est. $544,787 (5 bidders), river fill and bank protection, etc. flood protection, Item F-2-R, Mississippi River, St. Louis, CIVENG-23-065-60-14, MISSOURI. U. S. Eng., 420 Locust St., St. Louis 2, Mo. Bids Nov. 10. CD 10/12.

Lecoutour Constr. Co., 1419 Hampton Ave., St. Louis 10, Mo., LB $323,437, est. $330,000 (8 bidders), swimming pool and bathhouse facilities, Marquette Park, Minnesota Ave. and Gasconade St., ST. LOUIS, MO. City, Bd. P. Service, 304 City Hall, St. Louis 3, Mo. Bids Nov. 10. CD 10/12.

George L. Cousins Contgo Co., 875 N. Skinker Blvd., St. Louis 5, Mo., LB $386,016, est. $390,000 (9 bidders), grading, paving, fences, water facilities, lighting, playgrounds equip., tennis courts, etc. Willmore Park, Hampton and Jamisson Aves., ST. LOUIS, MO. City, Bd. P. Service, 304 City Hall, St. Louis 3, Mo. Bids Nov. 10. CD 10/21.

▲ **ARKANSAS**—State Hy. Dpt., State Capitol, Little Rock,

E. E. Barber Constr. Co., 722 Wheeler Ave., Box 254, Fort Smith, Ark., CA $1,578,509, south approach to Third Bridge, 0.291 of mile of ramp from bridge to East Capitol Ave. at Little Rock, Pulaski Co. Bids Nov. 4, awarded Nov. 5. CD 10/26, under Streets and Roads.

† **Schultz & Lindsay Constr. Co.**, 3201 Broadway, Fargo, N. D., LB $252,267, Schedule A, Lower Heart River Local Flood Protection Proj. Unit, below Mandan, Mandan, CIVENG-32-015-60-1, NORTH DAKOTA. U. S. Eng., Riverdale, N. D. Bids Oct. 8. CD 10/1.

▲ **SOUTH DAKOTA**—State Hy. Dpt., Pierre,

Pasco Constr. Co., 1707 S. 1st Ave., Sioux Falls, S. D. and **Art Schimkat Constr. Co.**, Pierre, S. D., CA $535,457, grade, subbase, etc. 12.5 mi. U.S. 85 Ludlow South, Harding Co.; CA $529,027, grade, base 14.2 mi. U.S. 14 from Kellars Corner to S. County Line, Stanley Co. Bids Oct. 22, awarded Nov. 1. CD 10/27, under LB.

† **Bushman Constr. Co.**, Schneider Bldg., St. Joseph, Mo., LB $604,785, (6 bidders), Missouri River Basin Proj. Schedules 1 and 2, earthwork and structures for Osborne Canal Sta. 1069 plus 64.4 to 1719 plus 90, Osborne, Spec. DC 5242, KANSAS. Bureau Reclamation, Dpt. Interior, Stockton, Kan. Bids Nov. 5. CD 10/1.

▲† **Martin K. Eby Constr. Co., Inc.**, 610 N. Main, Wichita, Kan., LB $1,270,873, est. $1,256,950, (4 bidders), G/M Assembly and Technical Supply Rehabilitation, Forbes Air Force Base, ENG-23-028-60-13, TOPEKA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo. Bids Nov. 3. CD 10/6.

▲† **Hyde Constr. Co.**, 1804 N. Mill St., Jackson, Miss., LB $16,173,877, est. $18,032,080 (12 bidders), spillway non-overflow section and power intake for Keystone Dam, ENG-34-066-60-22, OKLAHOMA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Nov. 10. CD 10/27.

▲† **Hoffman & Borders**, 3904 Huaco Lane, Waco, Tex., CA $1,825,743, outlet works on Waco Dam and Reservoir, Bosque River, ENG-41-433-60-11, TEXAS. U. S. Eng., 100 W. Vickery, Fort Worth, Tex. Bids Oct. 28. CD 10/30, under LB.

City, City Hall, Lufkin, Tex., Owner Builds, $105,000, concrete sanitary sewer lines, LUFKIN, TEX. CD 1/2/59.

Howard Pool Constr. Co., 3115 Kirby Dr., Houston, Tex., LB $299,805, sewage plant modifications (Lufkin, Tex.), Freese, Nichols, Turner & Collie, 2111 C&I Life Bldg., Houston, Tex., engrs. Bids Nov. 3.

BUILDINGS—LB & CA

▲ **Adolfson & Peterson**, 2817 Bryant Ave. South, Minneapolis, Minn., CA $1,487,000, two ELEMENTARY SCHOOLS and addn. to ELEMENTARY SCHOOL, ROBBINSDALE, MINN. Bd. Educ. Independent School Dist. No. 281, Robbinsdale, Minn. Bids Nov. 3. CD 11/9, under LB.

▲ **M. Mandel, Inc.**, 1014 Plymouth Ave., Minneapolis, Minn., CA $1,362,756, general contract JUNIOR HIGH SCHOOL, ST. CLOUD, MINN. Bd. Educ. Independent School Dist. No. 742, St. Cloud, Minn. Bids Oct. 29. CD 11/5, under LB.

C. H. Peterson Constr. Co., 4020 Minnetonka Blvd., Minneapolis, Minn., CA $602,700, general contract HOSPITAL, STILLWATER, MINN. Lakeview Memorial Hospital Assn., 929 W. Anderson St., Stillwater, Minn. Bids Nov. 4. CD 11/10, under LB.

▲ **Wm. H. & Nelson Cunliff Co.**, 3230 Lindell Blvd., St. Louis 3, Mo., CA 1 story, 120 x 120 ft., approx. 15,000 sq. ft. structural steel, bar joists, masonry, concrete PLANT for mfg. pure silicon, jct. Hy. 70 and Missouri Hy. 79 west of ST. CHARLES, MO. Monsanto Chemical Co., 800 N. Lindbergh Blvd., Creve Couer, Mo. CD 8/17.

▲ **Glaze Constr. Co.**, 602 N. 2nd St., St. Joseph, Mo., CA Est. $1,250,000, 3 story, bsmnt., 140 x 159 concrete block, brick, steel frame HOSPITAL WING, ST. JOSEPH, MO. Missouri Methodist Hospital, c/o Dr. O. J. Carder, hospital administrator, St. Joseph, Mo. Bids Oct. 13. CD 10/9.

R. K. & A. Jones, Inc., P.O. Box 297, Florissant, Mo., CA $930,000, general contract 1 story, 13,800 sq. ft. HOTEL, four 2 story, brick, masonry blocks, concrete, steel, etc. RESIDENTIAL BLDGS., Lindbergh Blvd. south of US 66, SUNSET HILLS (ST. LOUIS 27 P.O.), Mo. Holiday Inn South, Inc., c/o Winkler & Thompson, archts., 8015 Forsyth Blvd., Clayton 24, Mo. Bids Aug. 11. CD 8/21, under LB.

Short & Brownlee Constr. Co., 124 River Rd., Little Rock, Ark., CA Est. $400,000, 1 story, 15,500 sq. ft. RECREATIONAL BLDG., incl. 16 bowling lanes, automatic pinsetters, cocktail lounge, etc., HOT SPRINGS, ARK. B & L Corp., c/o Bert Bone, Rte. 1, Box 12, Hot Springs, Ark.

St. Joseph's Hospital, Deadwood, S. D., rejected bids Oct. 27, general constr. 2 story, bsmnt. HOSPITAL addn., DEADWOOD, S. D. LB $438,800. CD 11/5, under LB.

H. H. Frost & Assocs., 6617 Snider Plaza, Dallas, Tex., Purchase and Hire, $441,175, 35 DWELLINGS; $416,400, 37 DWELLINGS, BALCH SPRINGS, TEX. CD 9/10.

▲ **Lee-Emmert Constr. Co.**, Richardson, Tex., CA $1,039,792 Base Bid, SCHOOL of MUSIC, DENTON, TEX. North Texas State College, Denton, Tex. Bids Oct. 29. CD 11/2, under LB.

▲ **Flame, Inc.**, Duncanville, Tex., Owner Builds, $445,000, 44 low price DWELLINGS; $429,000, 32 DUPLEXES; $405,000, 36 DWELLINGS, DUNCANVILLE, TEX. Grand total $1,279,000. CD 8/28.

American Constr. Co., 2128 Welsh St., Houston, Tex., CA $410,115, base contr. BOWLING CENTER, 400 block W. Little York Rd., HOUSTON, TEX. Liston Ltd., 2325 Mimosa St., Houston, Tex. CD 11/10.

Cagle & Hayden, Inc., 2701 Texas St., Houston, Tex., Purchase and Hire, $429,150, 16 DWELLINGS; $420,000, 14 DWELLINGS, west of city limits Benignus Rd., HOUSTON, TEX. CD 9/30.

Canterbury Village, c/o D. H. Canterbury & John B. Brown Developers-Builders, 1201 Almeda-Genoa Rd., Houston, Tex., Owner Builds, $500,000, SHOPPING CENTER, Canterbury Subdivision, HOUSTON, TEX. CD 5/7.

D. H. Canterbury & Jno. B. Brown, Developers-Builders, 1201 Almeda-Genoa Rds., Houston, Tex., Purchase and Hire, $417,225, 33 DWELLINGS; $411,500, 40 DWELLINGS, Canterbury Village, HOUSTON, TEX. CD 8/24.

King Constr. Co., 3818 Chaffin St., Houston, Tex., CA $456,000, 40 DWELLINGS; CA $416,000, 35 DWELLINGS, Freeway Forest Subdivision, HOUSTON, TEX. Bayou Homesites, Inc., c/o Robert V. King, 9546 Meadowbriar, Houston, Tex. CD 10/14.

▲ **Krebs Constr. Co.**, 3650 W. 11th St., Houston, Tex., CA $1,162,500, 116,500 sq. ft. masonry San Jacinto Senior HIGH SCHOOL addn., HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol Ave., Houston, Tex. Bids Nov. 3. CD 11/11, under LB.

(Continued on page 178)

Renaissance in Pittsburgh

There's truly a Golden glint on the Triangle now. Pittsburgh, once everyman's idea of what a city should *not* be, has shown the world what a city *can* be! What she has done today is thrilling. Imagine her tomorrow!

Every person and firm associated with this rebirth can be proud indeed. Certainly we, here at Lord Electric Company, are proud of our part in Pittsburgh's rejuvenation.

A national organization, with innumerable major electrical installations of every imaginable description from coast to coast, Lord's Pittsburgh office is a fully self-contained, self-sufficient, *Pittsburgh institution*. On the following pages we depict several representative projects in the Pittsburgh area served by LORD ELECTRIC COMPANY, INC.

STEEL! *A city of varied business and cultural interests, Pittsburgh is still known to all the world for its vast steel output. Appropriately enough, Lord Electric Company has performed a wide variety of electrical installations for some of the Nation's largest and best known producers in the Pittsburgh area.*

At present Lord Electric's Pittsburgh office has under contract six more installations in the steel industry.

MORE ➡

GALLERY NO. 4

SOME OF OUR

VALUED CLIENTS

IN THE PITTSBURGH AREA

GATEWAY CENTER
Owner Firm: Equitable Life Assurance, N. Y.
General Contractors: Starrett Bros. & Eken, Inc.
Architect: Irwin Clavan-Eggers & Higgins
Engineers: Meyer, Strong & Jones

PITTSBURGH SUN-TELEGRAPH ADDITION
Hearst Publishing Company
General Contractor: Mellon-Stuart Company
Architect: Prack & Prack
Engineer: Frank Wadlow

LORD ELECTRIC

PITTSBURGH NEW YORK BOSTON

JOHN J. KANE HOSPITAL
built for Allegheny County Institution District
General Contractor: Sherry-Richards Company
Architect: Button, McLean, Mitchell & Ritchey
Engineer: Edward T. Wiesmann

GULF RESEARCH LABORATORIES
General Contractor: Wigton-Abbott Corp.
Architects & Engineers: Wigton Abbott Corp.

GRADUATE SCHOOL OF PUBLIC HEALTH
University of Pittsburgh
General Contractor: Mellon-Stuart Company
Architect: Eggers & Higgins
Engineer: Smith & Silverman

LORD ELECTRIC COMPANY, INC.

Pioneer in electrical installation since 1895 —

National in scope — local in quality of service —

Financial resources to handle jobs of *any* size —

65 years of experience in every kind of electrical installation —

Excellent labor relations throughout the Nation —

Defense experience includes vast atomic facilities and missile installations —

Completely autonomous Pittsburgh offices and field forces —

Unconditional guarantee of workmanship and materials.

C COMPANY, INC.

PORTLAND, ORE. RICHLAND, WASH.

here's how TRETOL's "ACTIONATE" can ease your Winter Concreting problems and save you money...

ACTIONATE

- Speeds up the initial concrete set time
- Permits finishers to finish faster, without delay, for sharply reduced labor costs
- Permits a substantial reduction in the water/cement ratio
- Provides greater workability and ease in placing
- Eliminates or minimizes the need for artificial heat or coverings
- Extends the concreting season—permits jobs to be completed on schedule

FOR FASTER, BELOW FREEZING CONCRETING

ACTIONATE is a multi-purpose liquid chemical admixture that is added directly to the gaging water of the concrete mix where it speeds up the concrete hydration and curing, and permits concrete placing in sub-freezing conditions. ACTIONATE's formulation contains Tretol's superior wetting agent that imparts a greater wetting action to the water, thus reducing the amount of water normally required to attain a given slump and workability.

LET "ACTIONATE" GO TO WORK FOR YOU THIS WINTER!

For more detailed information and the name of your nearest Distributor write

TRETOL INC.

Quality Products for Concrete and Masonry

7252 W. 66th STREET, CHICAGO 38, ILLINOIS

(Continued from page 174)

Lakewood Bldg. Co., 4034 Grapevine Rd., Houston, Tex. Purchase and Hire, $405,000, 22 DWELLINGS, Woodforest area, HOUSTON, TEX. CD 10/5.

▲ Oak Glen Bldg. Co. (Subsidiary Suburban Homes Realty Co.), 730 Little York Rd., Houston, Tex. Owner Builds, $431,225, 32 DWELLINGS; $408,000, 28 DWELLINGS; $416,775, 26 DWELLINGS, Shepherd Park Plaza and North of 43rd St., HOUSTON, TEX. Grand total $1,256,000. CD 10/8.

John H. Paine Constr. Co., 8546 Norton Dr., Houston, Tex., Owner Builds, $421,000, 48 DWELLINGS; $412,450, 42 DWELLINGS, Campbell Woods and Langwood Subdivision, HOUSTON, TEX. CD 10/27.

S&H Lumber & Bldg. Corp., 1516 Oak Meadows St., Houston, Tex., Owner Builds, $405,000, 30 DWELLINGS; $412,500, 33 DWELLINGS, HOUSTON, TEX. CD 10/27.

W. T. Yett Homes, Inc., 402 E. Mally St., San Antonio, Tex., Owner Builds, $448,150, 44 DWELLINGS; $409,700, 34 DWELLINGS, SAN ANTONIO, TEX.

Roland R. Reinhardt, Contractor, 5935 San Pedro Ave., San Antonio, Tex., Owner Builds, $416,500, 28 DWELLINGS, off Loop 13, southside, SAN ANTONIO, TEX. CD 10/20.

E. H. Jaroszewski, Contractor, 503 Lookout St., San Antonio, Tex., Owner Builds, $417,200, 28 DWELLINGS, Dellcrest Subdivision, SAN ANTONIO, TEX. CD 10/29.

Olmos Lumber Co., 2818 N. McCullough Ave., San Antonio, Tex., Owner Builds, $440,000, 22 DWELLINGS, Harmony Hills Subdivision, SAN ANTONIO, TEX. CD 10/8.

Southway Shopping Center, c/o Truman B. Douty, archt., Hermann Prof. Bldg., Houston, Tex., Owner Builds, $890,000, Phase 1, SHOPPING CENTER, SOUTH HOUSTON, TEX. CD 11/10.

† C. H. Leavell & Co., 1900 Wyoming Ave., El Paso, Tex., CA $669,900, DIESEL ENGINE POWER PLANT, White Sands Missile Range, IFB ENG-29-005-60-12, LAS CRUSES, N. M. U. S. Eng., P.O. Box 1538, Albuquerque, N. M.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
December 1 Washington
STREETS AND ROADS
December 1 Washington December 16, 17 California

† Calif., Sacramento—NCO OPEN MESS—BA 12/16—U. S. Eng., 1209 8th St., concrete block masonry, NCO open mess, utilities, etc., Mather Air Force Base, Spec. 2579, ENG-04-167-60-25. $450,000. CD 8/23/56.

BUILDINGS—BA

▲ Calif., Los Angeles—SCHOOL—BA 12/1—Bd. Educ., 1425 S. San Pedro St., modernization main bldgs., classrooms and multipurpose bldgs., Phase 2, Fleming Junior High School, Lomita. $1,000,000. CD 10/28/58.

▲ Calif., San Jose—LIBRARY—BA 12/22—State Div. Architecture, 1120 N. St., Sacramento, 6 story, 27,000 sq. ft. library addn., San Jose State College. $2,000,000. CD 2/4/58.

BUILDINGS—SLC

▲ Calif., Sacramento—SEMINARY—Sacramento Catholic Diocese, The Chancery, 1119 K St., soon lets contract St. Pius X Seminary, 58 acre site south of here, incl. 250 capacity chapel, administration and classroom units, 2 story housing unit for faculty and 2 two-story housing units for seminarians. $2,000,000. Harry J. Devine, 1012 J St., archt.

HEAVY CONSTRUCTION—LB & CA

† IDAHO — Bureau P. Rds., Dpt. Commerce, Boise, Bids opened 11/4,
MacGregor Triangle Co., 200 Sunrise Rim, Boise, Idaho, LB $479,137, (11 bidders), grading, constr. 110 ft. rein.-con. bridge, 8 mi. Cascade-Warm Lake Hy., Proj. 22-A4, B1, Valley Co. CD 10/19.

† WASHINGTON—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore. Bids opened 11/4,
Bocek Bros., P. O. Box 66, Hoquiam, Wash., LB $408,137, (9 bidders), grading, surf. and bit. paving 6.118 mi. Hoh River Rd. in Olympic National Park, Proj. 16-A Jefferson Co. CD 10/23.

▲† R. A. Heintz, Co., 211 North East Columbia Blvd., Portland, Ore. and Rogers Constr. Co., 11760 North east Glison St., Portland, Ore., LB $3,132,802, est. $3,731,135, (15 bidders), rail relocation, Ice Harbor Dam, Inv. 60-5, WASHINGTON. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Nov. 10. CD 11/9.

Rainier Ice & Cold Storage Co., 6004 Airport Way, Seattle 4, Wash., CA Est. $625,000, Spokane St. Fish and Cold Storage Plant Renovation, SEATTLE, WASH. Port of Seattle, Bell St. Terminal, Seattle 1, Wash. CD 1/6.

Westshore Marina Assocs., c/o R. Baxter, 3004 28 Ave. W., Seattle, Wash., Day Labor, $600,000, covered moorage for 100 pleasure boats and 2-level 18,000 sq. ft. office bldg., 1800 Westlake Ave. N., SEATTLE, WASH. Peterson & Adams, Smith Tower, Seattle, Wash., archts.

▲ CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles. Bids opened 11/5,
Griffith Co., 1060 South Broadway, Los Angeles 15, Calif., LB $2,744,478, (7 bidders), grade, pave to constr. 2.7 mi. 6 lane freeway, U. S. Hy. 80 between 0.4 mi. west of Chase Ave. and Ballantyne Lane in El Cajon, XI-S. D.-12-Ecj., San Diego Co. CD 10/8.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento. Bids opened 11/4,
Lord & Bishop, Inc., P. O. Box 812, Sacramento, Calif. LB $577,107, (17 bidders), 4 lane bridge over American River, FAS Co. Rd. 933 (Watt Ave. Exten.), about 2 mi. east of Sacramento, III-Sac-933, Sacramento Co. CD 10/2.

▲ CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento. Bids opened 11/4,
Calif.—Parish Bros., Inc., P. O. Box 6, Benicia, Calif., LB $648,183, (14 bidders), grading, surf. 2 lanes future 4 lane divided hy. 1.5 mi. FAS Co. Rd. 1256 (Cummings Skyway) between U. S. Hy. 40 near Crockett and Crockett Blvd. IV-C. C.-1256, Contra Costa Co.;
Calif.—Fredrickson & Watson Constr. Co., 873 81st Ave., Oakland, Calif., LB $673,540, (15 bidders), grade, surf. to realign 2.8 mi. FAS Co. Rd. 786 (Trenton Rd.) between Wohler Rd. and 1.2 mi. west of Olivet Rd. about 7 mi. N. W. of Santa Rosa and bridge over Mark West Creek, IV-Son-786, Sonoma Co.;
Calif. — R. A. Westbrook, Inc. & Morrison-Knudsen Co., Inc., 6431 Elvas Ave., Sacramento, Calif., LB $535,061, (10 bidders), grade, base material FAS Co. Rd. 1024 (Alderpoint Rd.) between Bridgeville and 4.1 mi. south, I-Num-1204, Humboldt Co.;
Calif.—Butler & Fox, 1278 Tyler St., Salinas, Calif., LB $133,834, (10 bidders), reconstr., wid'n. 1.8 mi. FAS Co. Rd. 654 (Carpenteria Rd.) between 2.4 mi. and 0.6 mi. south of Aromas, V-Mon-654. Monterey Co.;
Calif.—Dicco Inc., P. O. Box 217, Station A, Bakersfield, Calif., LB $204,920, (9 bidders), reconstr., wid'n. 6 mi. FAS Co. Rd. 1321 (Palm Ave.) between Lerdo Ave. and Wasco, VI-Ker-1321, Kern Co. CD 10/2;
Calif.—I. L. Croft & Son Inc., P. O. Box 428, Saugus, Calif., LB $656,768, (5 bidders), grade, surf. to realign 4.1 mi. State Sign Rte 89 (Luther Pass Hy.) between Picketts in Alpine Co. and west of Grass Lake, El Dorado Co., X-Al-E. D.-23, F. A., Alpine and El Dorado Counties. CD 10/9.

O. K. Mittry & Son, 15905 S. Broadway, Gardena, Calif., LB $877,870, (15 bidders), Bethany Forebay Dam and 2 mi. canal section, 1st unit of South Bay Aqueduct, Alameda Co., Spec. 59-22, CALIFORNIA. State Dpt. Water Resources, 1120 N. St., Sacramento, Calif.

Peter Kiewit & Sons, 405 E. Main St., Medford, Ore., CA $622,033, 680 ft. Martins Ferry Bridge Klamath River, near Weitchpec, EUREKA, CALIF. Humboldt Co., Veterans Memorial Bldg., Eureka, Calif. CD 9/10, under LB.

Camco Constr. Co., Box 2127, Fullerton, Calif., LB $462,652, est. $700,000, (7 bidders), Imprvs. in Alta Laguna Imprvt. Dist. No. 1, LAGUNA BEACH, CALIF. City, 505 Forest Ave., Laguna Beach, Calif. Bids Nov. 4. CD 10/22.

General Electric Co., 1 River Rd., Schenectady, N. Y., CA Est. $175,000, 10 kw. thermal pool-type nuclear teaching reactor, PALO ALTO, CALIF. Stanford University, Campus, Palo Alto, Calif.

▲ John A. Artukovich Sons, Inc., 16200 South Atlantic Ave., Paramount, Calif., CA $1,239,086, New Hope Placentia Trunk Sewer, Contr. No. 2-3, SANTA ANA, CALIF. Orange County Sanitation Dist. No. 2, Courthouse, Santa Ana, Calif. Bids Aug. 26. CD 9/3, under LB.

Lew Jones Constr. Co., 1535 S. 10th St., San Jose, Calif., CA $928,097, bridge overpass De La Cruz Blvd., SANTA CLARA, CALIF. City, City Hall, Santa Clara, Calif. Bids Oct. 14. CD 10/22, under LB.

P&E Constr. Co., 1620 S. 7th St., San Jose, Calif., LB $429,197 (9 bidders) subdivision imprvs., incl. street imprvs., curbs, gutters, drainage, etc., Nogales Industrial Assessment Dist., SUNNYVALE, CALIF. City, City Hall, Sunnyvale, Calif. Bids Nov. 4. CD 12/27/56.

▲† Samuel N. Zarpas, Inc. & Fullerton Constr. Co., 19156 Filer Ave., Detroit, Mich., CA $2,490,000. BOMARC anti-aircraft missile launching, Incl. 28 launcher shelter ordnance storage bldg., traffic check house, composite bldg., assembly and maintenance security control and fire station; pump house, pumping station, water storage tank and utilities, ENG-04-203-60-108, TRAVIS AIR FORCE BASE, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids Oct. 20. CD 10/23, under LB.

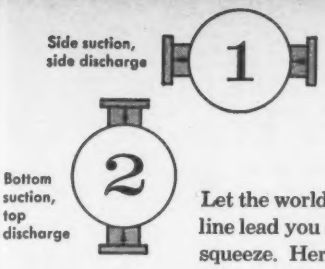
▲ HAWAII—State Dpt. P. Rds., 869 Punchbowl St., Honolulu, Zone 13, Bids opened 11/5,
Honolulu Builders Ltd., 808 Ahua St., Honolulu 17, Hawaii, LB $1,217,315, (9 bidders), grading, paving portion Hawaii Belt Rd. Districts of South Kona and Kau. Proj. BF-011-1(3), Island of Hawaii. CD 10/19.

BUILDINGS—LB & CA

Dearden & Price, 243 Fruit Ave., Salt Lake City, Utah, CA Est. $500,000, OFFICE and WAREHOUSE, SALT LAKE CITY, UTAH. Souvall Bros., Inc., 3260 W. Temple St., Salt Lake City, Utah. Bids Oct. 26. CD 10/28.

▲ H. & J. Constr. Co., 1722 E. Ind. School Rd., Phoenix, Ariz., CA $4,000,000, three 5 story and two 2 story APARTMENTS, Frontire Gardens, Thomas and Third St., PHOENIX, ARIZ. Mike Robinson,

(Continued on page 180)



Pinched for pump space?

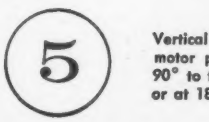
Let the world's broadest centrifugal pump line lead you out of your installation space squeeze. Here's versatility that blankets every suction or discharge requirement — with horizontal (see 1 to 4 illustrated) or vertical (see 5 and 6) mountings. Capacities run from a flow to a flood — to 250,000 gpm or more.

The size of the A-C pump line, the service and experience behind it, are without equal in industry. For data, contact your A-C representative or distributor. Or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

Make the most of it with an Allis-Chalmers centrifugal pump

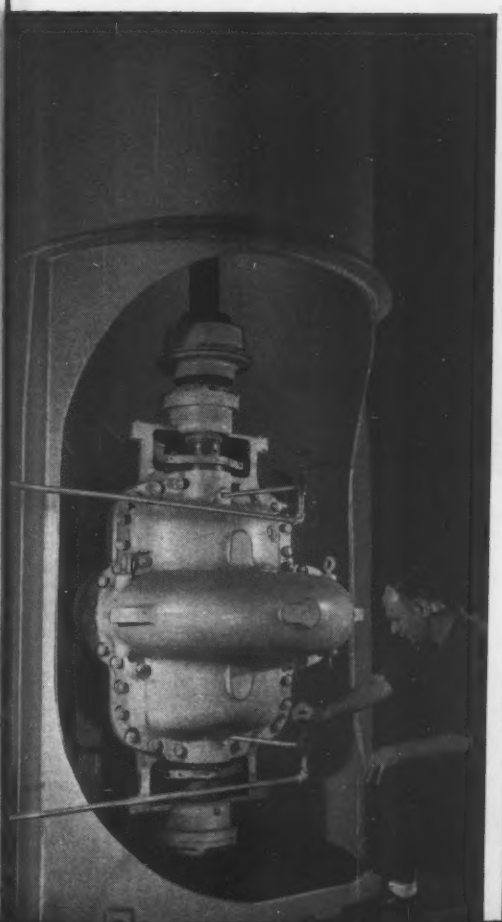
ALLIS-CHALMERS

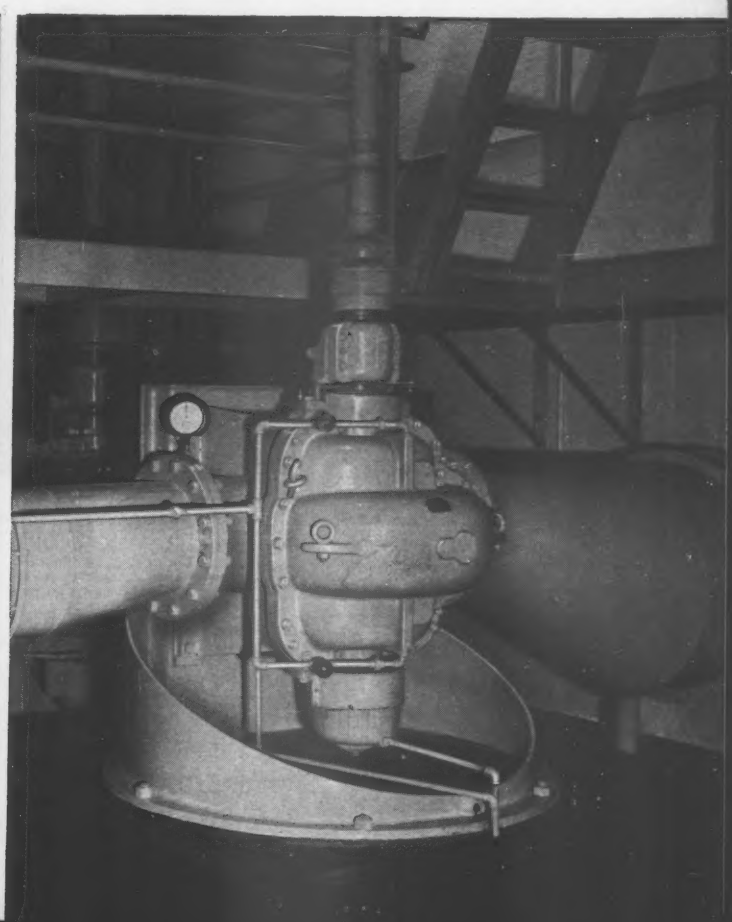
A-1197-G1



Vertical mounting with barrel supporting motor provides for discharge at either 90° to the suction (shown at lower left) or at 180° to the suction.

Mounted vertically, Allis-Chalmers pumps can be driven with motor on another floor — discharge at either 180° to the suction (shown at lower right) or at 90° to the suction.





Here's Proof . . POSITIVE!

Presto-SEAL*

"VITRIFIED CLAY PIPE THAT JOINTS LIKE MAGIC"

Meets Exacting Field Tests

It's not just idle boasting when we say that Presto-SEAL pipe by KAUL passes field test after field test with flying colors. As the accompanying photos show, Presto-SEAL installations are being made under rugged field conditions, yet contractors, engineers, and inspection authorities alike report faster on-the-job assembly; tighter, flexible and leak proof joints; permanent root proof and corrosive-resistant lines. Yes, Presto-SEAL, in sizes from 4" to 36", both standard and extra strength, is rapidly becoming the SPECIFIED choice for scores of sewage engineering and contracting firms. Why don't you specify Presto-SEAL pipe for your next job?

GENERAL INFORMATION

Job Location . . . Zanesville Interceptor Sewer Zanesville, Ohio
Engineer . . . . . Floyd G. Browne & Associates, Marion, Ohio
Contractor . . . . Roger Au & Sons Mansfield, Ohio
Materials . . . . . 15,000 Ft. V.C. Pipe, A.S.T.M. C-13 with Presto-SEAL joints, 6" to 24" diameter inclusive.

TEST DATA

Date of Test . . . . . June 18, 1959
Size of Line . . . . . 24" V.C. Pipe
Length of Line . . . . . 250 Ft.
Type of Test . . . . . Exfiltration
Allowable Loss . . . . . 500 Gal/In/Mi/day

RESULTS

After line was filled only 90 min., loss was approx. 1/3 the allowable.

*T.M. Reg.

KAUL clay company

TORONTO, OHIO ● U. S. A.

Write for FREE Descriptive Literature and Specification Data

(Continued from page 178)

Ramada Hotel, Phoenix, Ariz., and O. A. Helsing, 2954 N. Phoenix, Ariz., and Archie Kleven, Scottsdale, Ariz. Awarded Nov. 6.

H. K. Schroeder Constr. Co., 11204 Roosevelt Way, Seattle, Wash., Day Labor, $550,000, 2 frame, masonry bldgs. for Crest View Terrace APARTMENTS, swimming pool, BELLEVUE, WASH.

H. Halvorson, Inc., 20054 Pacific Hy. S., Seattle, Wash., CA Est. $400,000, 23,000 sq. ft. FOOD MARKET, EVERETT, WASH. Albertson's, Inc., 5013 Davison St., Seattle, Wash. CD 8/10.

▲ **W. Taylor**, Houghton, Wash., Day Labor, $1,500,000, 70 HOUSES in Wildwood Heights, HOUGHTON, WASH.

▲† **R. B. Miles Constr. Co.**, P. O. Box 113, Mercer Island, Wash., CA $1,698,866, EXHAUST AIR CONTAMINATION FACILITIES for existing reactors in 8 areas of Hanford Works, RICHLAND, WASH. Atomic Energy Comn., Hanford Operations Office, P. O. Box 550, Richland, Wash. Bids Oct. 28. CD 11/2, under LB.

Corona Corp., c/o K. E. Hiatt, 1401 E. Harrison St., Seattle, Wash., Day Labor, $600,000, 5 story, frame, masonry APARTMENT, swimming pool, 438 Belmont Ave. N., SEATTLE, WASH. McCool, Morgan & Assocs., 110 Eastlake Ave., Seattle, Wash., archts. CD 1/5.

University Enterprises, General Ins. Bldg., Seattle 5, Wash., Day Labor, $500,000, 102 x 210 ft., rein.-con. OFFICE, SEATTLE, WASH. CD 9/30.

Harry Kelso, Inc., Box 455, Newport Beach, Calif., CA $731,795, 52 frame DWELLINGS, Gamma, Delta, Beta, Alpha and Bond Sts., ANAHEIM, CALIF. Leilani Village, Box 509, Santa Ana, Calif. B. Leovanas, 3432 Via Oporto, Newport Beach, Calif., archt.

▲ **Engstrum & Nourse Co.**, 923 Folsom St., San Francisco, Calif., LB $7,007,000, with lab. furniture, $5,957,000 without lab furniture, (7 bidders), 8 story with 2 bsmnts. and 2-level penthouse, rein.-con. CHEMISTRY BLDG., BERKELEY, CALIF. Bd. Regents, University of California, Berkeley, Calif. Anshen & Allen, 461 Bush St., San Francisco, Calif., archts. CD 3/3.

Wm. Simpson Constr. Co., 2401 Beverly Blvd., Los Angeles 57, Calif., CA $672,080, concrete BANK, 8150 Sunset Blvd., LOS ANGELES, CALIF. Lytton Savings & Loan Assoc., 7755 Sunset Blvd., Los Angeles, Calif. Kurt W. Meyer, 132 S. Vermont Ave., Los Angeles, Calif., archt. Carl Johnson, 800 Colorado Blvd., Los Angeles, Calif., engr.

RFL Constr. Co., P. O. Box 1623, Fresno, Calif., LB $596,240, (9 bidders), 1 story, 20,000 sq. ft. wood frame, HIGH SCHOOL, PESCADERO, CALIF. Pescadero Union High School Dist., North St., Pescadero, Calif. Bids Nov. 3. CD 10/19.

Rexford Constr. Co., 8240 Santa Monica Blvd., Los Angeles, Calif., CA $497,400, 42 frame DWELLINGS, Witt and Holland Rds., POWAY, CALIF. Rexford Terraces, 8240 Santa Monica Blvd., Los Angeles, Calif.

▲ **San Diego Gas & Electric Co.**, 861 6th Ave., San Diego, Calif., Owner Builds, Total est. $15,000,000, 142,000 kw. BAY POWER PLANT UNIT NO. 2, SAN DIEGO, CALIF. Pioneer Engineering Co., 80 E. Jackson St., Chicago, Ill., engr. CD 10/25/55; Westinghouse Electric Corp., 3 Gateway Center, Pittsburgh, Pa. CA turbine generator (San Diego, Calif.); Babcock & Wilcox Co., 161 E. 42nd St., New York, N. Y., CA boiler (San Diego, Calif.).

▲ **Cahill Bros.**, 350 Sansome St., San Francisco, Calif., LB $2,228,279, (6 bidders), two 12 story and one 11 story, 194 dwellings units Ping Yuen Annex Low-Rent HOUSING, Broadway, Cordelia and Pacific Sts., SAN FRANCISCO, CALIF. City and San Francisco County Housing Auth., 440 Turk St., San Francisco, Calif. Bids Nov. 4. CD 10/6.

▲ **Charles L. Harney, Contractor**, 575 Berry St., San Francisco, Calif., Owner Builds, $3,000,000, twin 12 story, 120 unit rein.-con. APARTMENTS, incl. below ground parking, SAN FRANCISCO, CALIF. H. C. Baumann, 251 Kearny St., San Francisco, Calif., archt. CD 4/3.

† **Calcor Corp.**, 3383 East Gage Ave., Huntington Park, Calif., CA $474,570, general contract 28,000 sq. ft. steel Madison ELEMENTARY SCHOOL, Amic Ave. and 175 Pl., TORRANCE, CALIF. Torrance Unified School Dist., 2335 Plaza del Amo, Torrance, Calif. Bids Oct. 9. CD 9/29.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

November 24 British Columbia December 9 Ontario

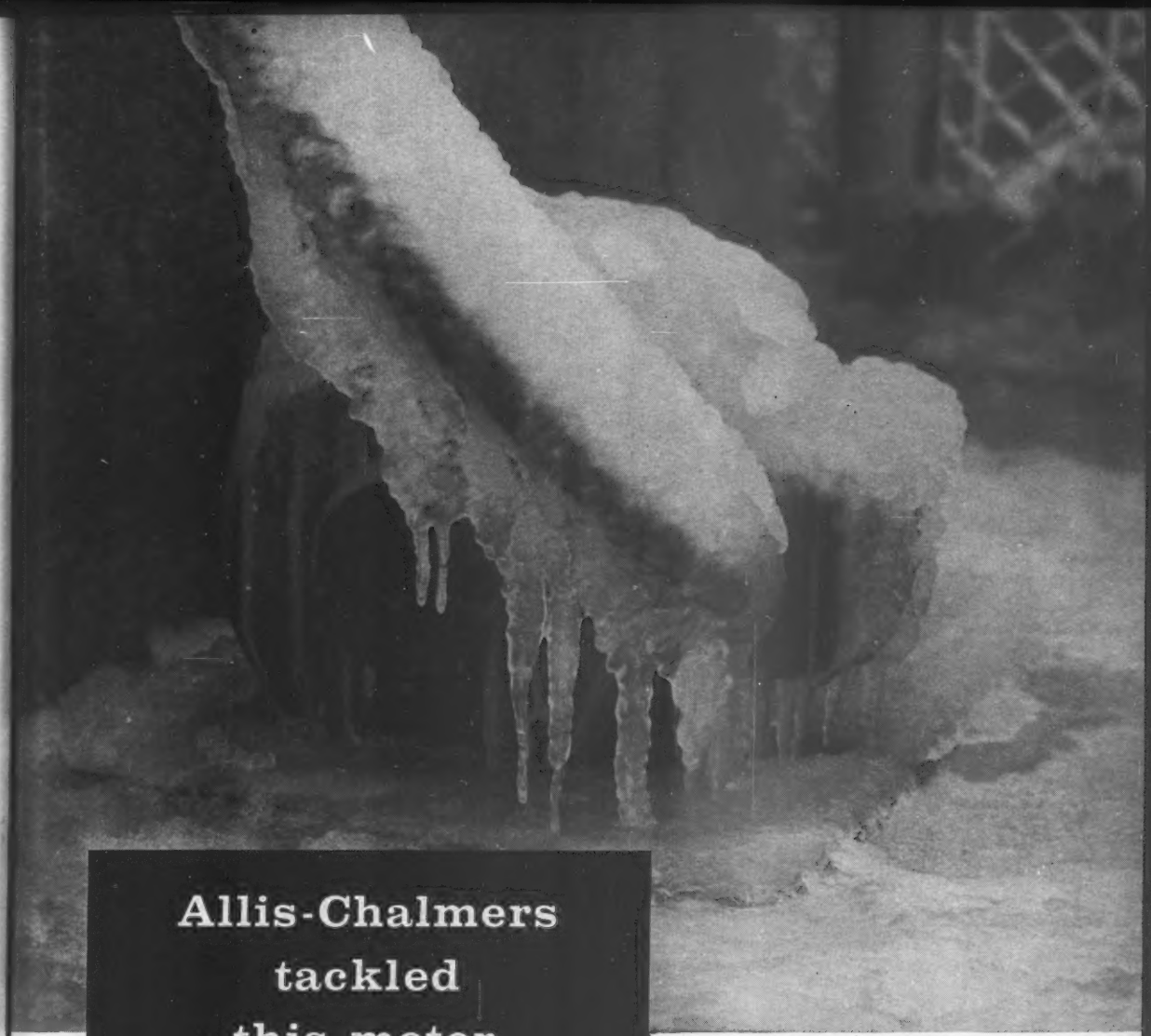
B. C., Port Alberni—WHARF—BA 11/25—Dpt. P. Wks., 404 Hunter Bldg., Ottawa, Ont., assembly wharf reconstr. $980,000. Plans deposit $50. Chief Engineer, Harbors & Rivers, Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., engr.

BUILDINGS—BA

Ont., Toronto—SCHOOL—BA 11/23—Bd. Educ., 155 College St., 3 story, 118x144 ft., structural steel Ken Public School addn. $915,000. Plans deposit $50. Coleman & Rankin, 2201 Kingston Rd., archts. Bids Oct. 8 rejected. CD 10/28, under LB.

Alta., Calgary—SCHOOL—BA 11/26—Calgary Pub. School Bd., 4th Ave. and 6th St. W., 2 story, precast concrete, masonry, steel Junior High School, Edmonton Trail and 3rd St. N.E. $630,000. Blais & Shedden, 223A-10th St. N.W., archts. CD 10/1.

(Continued on page 182)



Allis-Chalmers tackled this motor problem "cold"

Even heavy icing couldn't freeze this motor. An Allis-Chalmers customer required that this open-type *Super-Seal* motor (with *Poxeal* insulation) start even though embedded in ice.

The successful tests were conducted in the A-C Motor Laboratories where customers' motor needs point the way to continuous development programs.

Research, combined with testing of this type, has established Allis-Chalmers as a pioneer-leader in the motor industry. It has led to the most complete line of integral horsepower motors; it has led to tremendous acceptance of such A-C developments as *Synduction* and tube-type motors, and now *Super-Seal* motors.

Water and sewage works can benefit from this pioneer-leadership. *Contact your A-C representative or write Allis-Chalmers, General Products Division, Milwaukee 1, Wisconsin.*

Poxeal, Synduction and Super-Seal are Allis-Chalmers trademarks.

ALLIS-CHALMERS

A-5956-PW

SAUERMAN NEWS briefs

SAUERMAN BROS., INC.,
632 South 28th Avenue, Bellwood, Illinois
Linden 4-4892

Self-Unloading Vessels

Sauerman DragScrapers provide efficient clean-up and low-cost cargo unloading capacities from 100 tph. (or less) to over 2000 tph. They are a component part of many ship unloading installations.

The systems are designed to suit the requirements of a particular vessel and are being incorporated in the construction of new self-unloaders as well as in the conversion of existing vessels.

DragScraper unloading allows maximum space for cargo stowage. The cargo rides low in the hold providing greater stability and increased carrying capacity over cargoes which are hoppered high.

Sauerman ship unloaders are economically handling rock, ore, sand, coal and cement. One man controls the entire operation from a convenient station overlooking the hold and away from any hazards of material or working area.

(Condensed from Marine Brochure MB-1)

Handling Phosphate Ore

Ore concentrate is stockpiled and reclaimed as required to the foot of a bucket elevator by a Sauerman DragScraper Machine at a Southern chemical plant.

A self-propelled tail tower travels around the perimeter of the stockpile. The tower is shifted to change the line of operation. DragScraper haul length is 400 ft. The operator's station for the Sauerman hoist is located above the conveyors to give a clear view of the pile.

(Condensed from Sauerman News No. 151)

Digging a Trench Under Water

Digging a trench across the Big Calumet River was economically handled by a ¾-yd. Crescent DragScraper used with a ½-yd. crane. The crane's hoisting line was used as a track cable for the DragScraper and single wheel carrier. This cable was dead-ended on the opposite shore.

To permit gravity return of the DragScraper, the crane was placed upon a built-up mound of dirt and the boom raised to its highest point. Spooling capacity of the crane's load drum was just enough to allow the DragScraper to dig the trench the width of the river. Depth of the trench was about 6 ft. at an average depth of 12 ft. below water.

(Condensed from Sauerman News No. 151)

MORE NEWS AND INFORMATION

Issues of Sauerman News giving greater detail about the installations on this page are available on request. For full information, tell us your interest or requirements and ask for catalog. Contact Sauerman Bros., Inc., 632 S. 28th Ave., Bellwood, Ill.

(Continued from page 180)

Ont., Kemptville—STUDENTS RESIDENCE—BA 11/27—Ontario Dpt. P. Wks., Parliament Bldgs., Toronto, Zone 2, students residence, Kemptville Agricultural School, $550,000. Plans deposit $75. Dpt. Staff Engineers, Rm. 6436, East Block Parliament Bldgs., Toronto, engr.

Ont., Toronto—INSTITUTE—BA 12/2—Etobicoke Bd. Educ., 4969 Dundas St. W., Islington, Toronto, Kipling Collegiate Institute addn. $400,000. Gordon S. Adamson & Assocs., 52 St. Clair Ave. E., archts.

Sask., Carnduff—HEADQUARTERS—BA 12/9—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., steel, brick detachment headquarters for Royal Canadian Mounted Police, $470,000. Plans deposit $50. Chief Architect, Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., archt.

HEAVY CONSTRUCTION—LB & CA

▲ ALBERTA—Atla. Govt. Parliament Bldgs., Edmonton, Standard Gravel & Surfacing of Canada Ltd., 5340 1st St. S.W., Calgary, Alta., CA $1,347,797, grading, gravel surf., etc. Hy. A35 from High Level to Meander River. Awarded Nov. 3.

▲ BRITISH COLUMBIA—Dpt. Hys., Parliament Bldgs., Victoria,

Piggott Constr. Co. Ltd., Dawson Creek, B. C., CA $1,090,053, Proj. 1037, clearing, grubbing, gravel base 23.33 mi. Cassiar Rd., build and maintain ferry to transport material over Stikine River-Eddon Tenajon Lake sect. Trans Canada Hy., Atlin Dist. Awarded Nov. 3. CD 11/6, under LB.

Evan S. Martin Constr. Ltd., Kelvin House, 1245 Martingrove Rd., Rexdale P.O., Ont., LB $464,610, (3 bidders), nine double dwellings, single men's living quarters, at airport, GOOSE BAY, LABRADOR, Dpt. Transport, Hunter Bldg., Ottawa, Ont.

▲ Peter Leitch Constr. Ltd., 170 Scott St., Winnipeg, Man., CA $1,051,187, 200 ton city incinerator addn., WINNIPEG, MAN. City, City Hall, Winnipeg, Man. Awarded Nov. 3. CD 10/16, under LB.

Fischbach & Moore of Quebec Ltd., 5330 Royalmount Ave., Montreal, Que., CA Abt. $200,000, Second Phase, electrical work, overhaul and maintenance base, Montreal Airport, DORVAL, QUE. Trans-Canada Air Lines, 1060 University Ave., Montreal, Que. Ross, Rish, Duschenes & Barrett, 4115 Sherbrooke St. W., Montreal, Que., archts. Awarded Nov. 5. CD 1/6/58.

BUILDINGS—LB & CA

Jarvis Constr. Co. Ltd., 175 E. Broadway, Vancouver, B. C., Owner Builds, $560,000, HOTEL, off Fraser-Delta thruway, RICHMOND, B. C.

Rodney Contractors Ltd., Pleasant Rd., Yarmouth, N. S., LB $401,617, masonry SCHOOL addn., GREENWOOD, N. S. Central Mortgage & Housing Corp., 1032 Gottingen St., Halifax, N. S.

George A. Crain & Sons Ltd., 555 Cambridge St., Ottawa, Ont., LB $604,150, 1 story, bsmnt., rein.-con., brick, limestone, structural steel CAFETERIA, Riverside Dr., OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Nov. 4. CD 10/1.

▲ Curran & Herridge Constr. Co. Ltd., 283 Confederation St., Box 940, Sarnia, Ont., LB $1,300,000, 3 story, bsmnt., 70 x 131 ft., rein.-con. RESEARCH BLDG. with 20 x 27 ft. connecting link, SARNIA, ONT. Imperial Oil Ltd., 445 Christina St. S., Sarnia, Ont. Bids Oct. 28. CD 10/21.

Graham & Sibett Ltd., 1377 Weston Rd., Toronto, Ont., CA Est. over $500,000, 1 story, 281 x 338 ft., brick, structural steel, brick block FACTORY and OFFICE, TORONTO, ONT. Canadian Steel Strapping Co. Ltd., 258 Wallace Ave., Toronto, Ont. Bids Oct. 29, awarded Nov. 3. CD 10/26.

J. Lichenstein, 126 Palm Dr., Downsview, Ont., Owner Builds, $500,000, 5½ story, masonry, steel APARTMENT, Birchmount Rd., TORONTO, ONT. E. I. Richmond, 455 Spadina Ave., Toronto, Ont., archt.

Jacques Labrecque, 28 30th St. E., Orsainville, Que., LB $425,000, CENTRAL SCHOOL, ORSAINVILLE, QUE. Catholic School Comn. of Orsainville, Orsainville, Que. Joseph Marchand, 1125 rue des Laurentides, Quebec City, Que., archt. Pierre Warren, 600 Grande Allee E., Quebec City, Que., engr.

Jean Marie Lefebvre, 5623 Darlington Ave., Montreal, Que., LB $491,900 (9 bidders), 2 story, bsmnt., H-shaped, rein.-con., brick SCHOOL and GYMNASIUM, concrete fdn., POINTE AUX TREMBLES, QUE. Catholic School Comn. of Pointe aux Trembles, Pointe aux Trembles, Que. Bids Nov. 2. CD 10/23.

PUERTO RICO

HEAVY CONSTRUCTION—BA

† Puerto Rico, Roosevelt Roads—TRANSMISSION LINE—BA 12/9—Area Public Works Office, Caribbean, Admin. Bldg. Room 115, U. S. Naval Station, San Juan, replacement, imprv. 38,000 volt transmission line U. S. Naval Station, NBy 17946, Spec. No. 17946/59. $100,000-$250,000. CD 9/28.

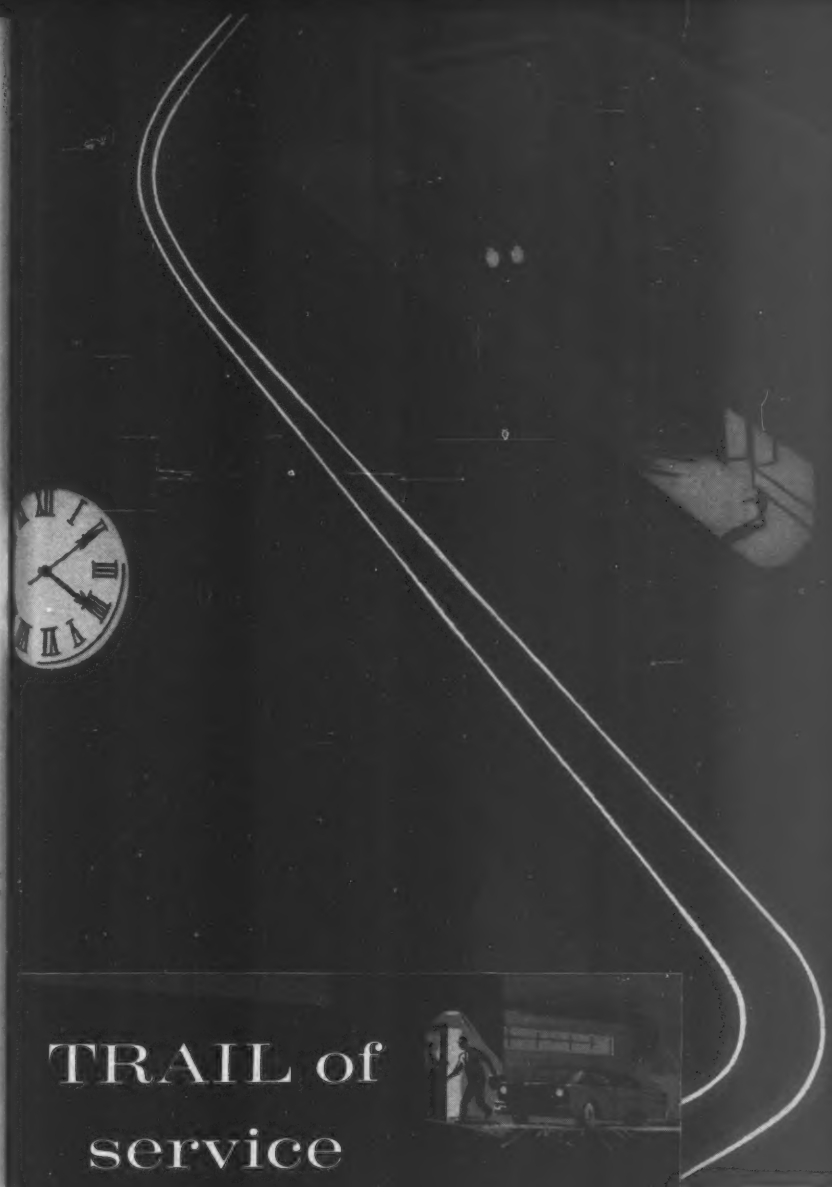
BUILDINGS—LB & CA

▲ IBEC Housing Corp., Box 2745 Rio Piedras, Puerto, Rico, Owner Builds, Est. $2,160,000, 250 HOMES, SAN JUAN, PUERTO RICO.

▲ Rafael Betancourt, Box 487, Rio Piedras, Puerto Rico, CA Est. $1,700,000, 11 story APARTMENT, RIO PIEDRAS, PUERTO RICO. Condominio Betancourt, Inc., Box 487, Rio Piedras, Puerto Rico.

▲ Miramar Constr. Co., Inc., Box 2889, San Juan, Puerto Rico, CA Est. $1,100,000, 3 story DEPARTMENT STORE, SAN JUAN, PUERTO RICO. Gonzalez Padin Co., Inc., Edificio Padin, San Juan, Puerto Rico. Toro & Ferrer, Calle Montserrate 560, San Juan, Puerto Rico, archts.

(Proposed Advertisements see p. 193 to 195)



TRAIL of service that never sleeps

Products for industry: electrical generation, distribution and utilization equipment; pumps; compressors; mechanical power transmission equipment; processing machinery; motors and control; water conditioning systems, plus materials handling equipment.

Backing up the broad line of Allis-Chalmers products are more than 200 field installation and service men. Available day or night, they respond promptly to the emergency needs of A-C customers.

Hundreds of other facilities, strategically located, guarantee lifetime service support to Allis-Chalmers products wherever they are applied.

Regional Offices are located in key industrial cities.

District Offices across the country cover every city or area wherever Allis-Chalmers equipment is used.

Certified Service Shops are only minutes away for expert round-the-clock service.

Warehouse Stocks are within easy reach of all these service teams for fast delivery.

Ask your A-C representative about this coast-to-coast service organization, and the lifetime service support behind every A-C product, or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-CHALMERS

Construction Scoreboard

CONTRACTS ...

AMOUNT OF CONTRACTS LET

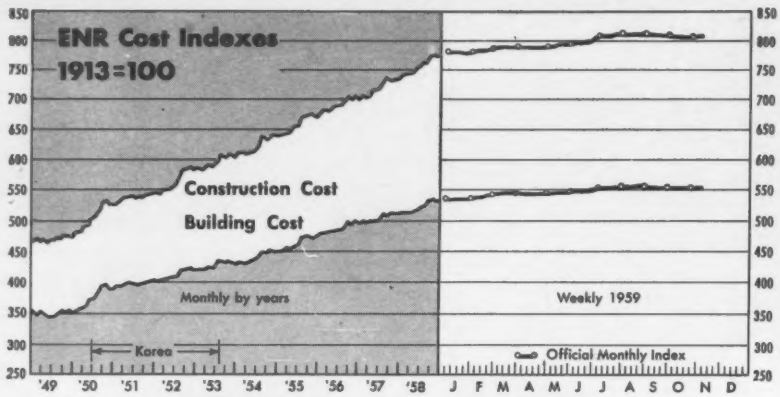
	This Week	Cum. 47 wks 1959	Chge '58-'59 %
	millions		
All Heavy Constr.	$372.1	$18,425.2	+ 5
By Ownership			
PRIVATE	232.3	9,331.0	+32
PUBLIC	139.8	9,094.2	−13
State & Municipal	85.6	6,617.4	−15
Federal	54.2	2,476.8	− 7
By Type of Work			
PUBLIC			
Waterworks	1.6	352.4	+28
Sewerage	14.3	587.6	+ 7
Bridges*	12.0	645.4	− 2
Highways	26.3	2,629.9	−22
Earthworks, Dams & Waterways	19.4	797.6	−19
Buildings:			
Excl. Housing	39.5	2,352.6	− 2
Housing	4.1	554.2	−45
Unclassified	22.6	1,185.2	− 7
PRIVATE			
Buildings:			
Mass Housing	105.8	4,205.6	+24
Commercial	32.0	1,944.1	+17
Industrial	90.4	2,714.4	+67
Unclassified	4.1	456.2	+21

* Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

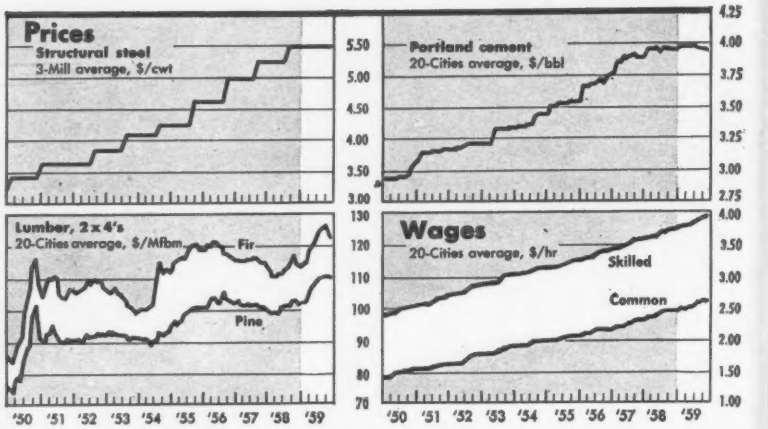
New Capital For Construction	Week of Nov. 12	Cum. 46 wks 1959	Chge '58-'59 %
	millions		
Corporate Securities	$ 41.2	$3,418.6	−27
State and Municipal:			
All Except Housing	76.5	5,259.3	− 5
Housing	....	107.5	− 6
Federal Loans	2.4	129.7	−30
Federal Aid	....	3,343.4	+29
Total Nonfederal	$120.1	$12,258.5	− 7
Federal Appropriations:			
Projects in U. S.	....	$3,564.1	−16
Outside U. S.	....	22.4	−51
Total New Capital	$120.1	$15,845.0	− 9



CURRENT COST INDEXES

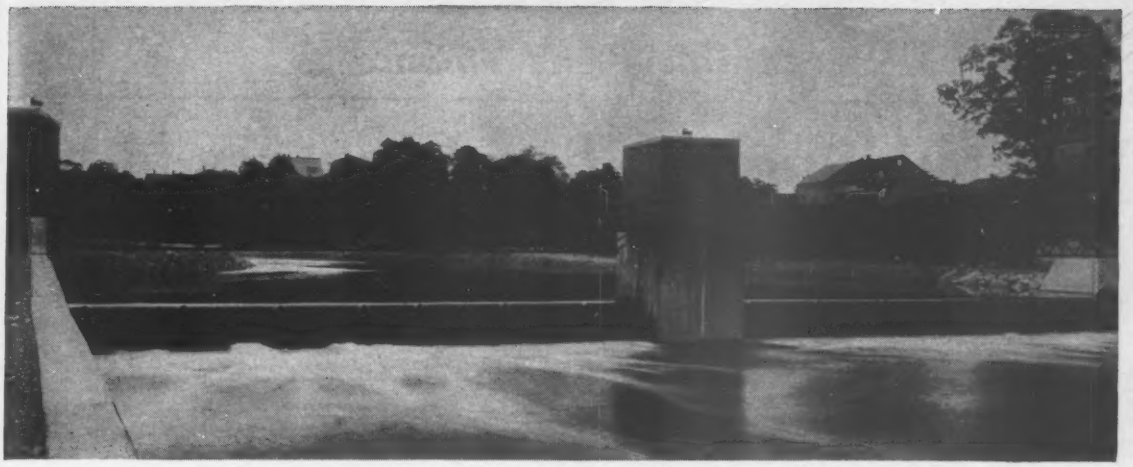
ENR INDEXES (1913=100), 20-cities' average	Week of Nov. 12 1959	% Change from Oct. 15 1959	% Change from Nov. 13 1958
Construction Cost	809.67	−0.1	+4.6
Building Cost	553.82	−0.2	+3.5

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



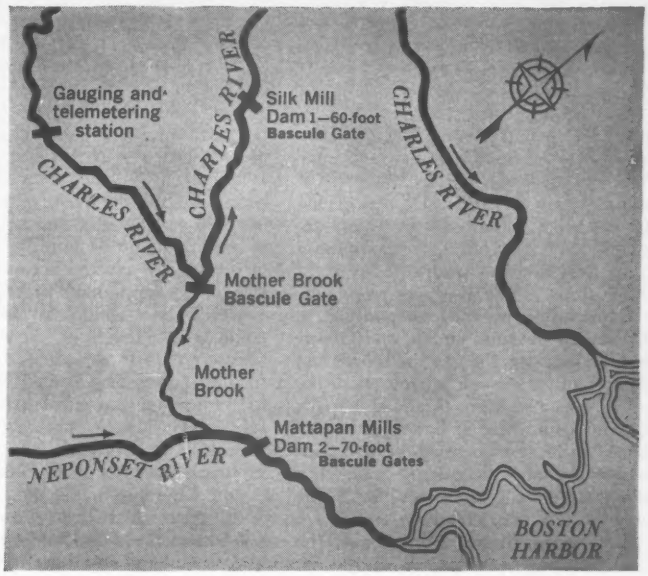
ENR COST INDEXES IN 22 CITIES, 1913=100

City	Construction Cost Nov. 1959	Percent Change from last Month	Percent Change from last Year	Building Cost Nov. 1959	Percent Change from last Month	Percent Change from last Year
Atlanta	623	−0.2	+6.7	499	0	+5.7
Baltimore	745	0	+5.2	558	+0.9	+10.8
Birmingham	652	0	+5.3	515	0	+4.5
Boston	830	−0.4	+4.1	560	−0.7	+4.5
Chicago	920	−0.2	+7.1	583	−0.5	+3.7
Cincinnati	815	−0.4	+4.8	540	−0.6	+4.7
Cleveland	921	0	+4.7	554	0	+3.9
Dallas	604	0	+5.4	490	0	+4.5
Denver	747	0	+2.1	545	0	+2.8
Detroit	961	0	+7.8	597	0	+3.6
Kansas City	798	−0.6	+3.9	553	−0.9	+3.8
Los Angeles	871	−0.4	+5.1	557	0	+4.3
Minneapolis	859	0	+4.2	569	0	+2.9
New Orleans	635	0	+2.6	508	0	+2.4
New York	1,011	−0.1	+6.8	646	0	+4.7
Philadelphia	791	−0.5	+0.1	578	−0.7	+1.6
Pittsburgh	849	−1.0	+2.7	601	−1.3	+1.3
St. Louis	877	0	+3.9	576	0	+2.3
San Francisco	853	0	+5.0	553	0	+3.9
Seattle	834	−0.6	+4.4	503	−0.9	+3.9
U. S.—20 Cities' average	810	0	+4.7	554	−0.2	+3.6
Montreal	630	0	+4.5	459	0	+2.2
Toronto	659	0	+5.8	490	0	+3.8



Two 70-foot by 5.3-foot **Bascule** Gates on the dam at Mattapan Mills operate in echelon. As the river rises, one gate moves down until its full capacity will no longer hold the river level; then the second lowers.

ALLIS-CHALMERS
BASCULE GATES
Provide Flood Control and Recreation Facilities on the Charles and Neponset Rivers



Four Allis-Chalmers *Bascule* Gates, installed on the Charles and Neponset Rivers just outside of Boston, provide a unique example of the features of this crest control gate. At Mother Brook, a 30-foot by 3.2-foot gate regulates flow in accordance with a court decree requiring that one third of the flow in the Charles River shall be diverted into the Neponset.

A gauging station, five miles upstream on the Charles, measures flow and telemeters it to a proportioning control unit at Mother Brook. A specially-designed A-C mechanism then adjusts the *Bascule* Gate to divert one third of the flow into the brook.

Bascule Gates at Silk Mill Dam and Mattapan Mills, all longer and higher, maintain pool levels for industrial use and recreational purposes. They also limit flood crests during periods of high flow. For complete information on our standard *Bascule* Gate designs covering a wide range of sizing, contact your A-C office, or write Allis-Chalmers Hydraulic Division, York, Pa.

Bascule and *Rotovalve* are Allis-Chalmers trademarks.

Hydraulic Division — RESEARCH | DESIGN | HYDRODYNAMICS | ENGINEERING | FABRICATION

Hydraulic Turbines & Accessories • Pump-Turbines • Pumps • Liquid Heaters
ROTOVALVE • Ball Valves • Butterfly Valves • Free-Discharge Valves

ALLIS-CHALMERS

1109

What Proposed Tax Changes Mean

- **Experts believe taxable income could be increased by $50 billion, thus permitting a rate reduction.**
- **But tightened loopholes would increase pressure on major sources of funds for construction**

Major sources of funds for construction projects would be sharply affected should Congress adopt a tax reform proposal now being considered by the House Ways and Means Committee.

Particularly involved are residential financing, state and local public works, and industrial and commercial construction.

The Ways and Means hearings, which opened this week, are exploratory. A final decision to introduce legislation has not been made. It may come next year—perhaps in 1961. Chairman Wilbur D. Mills (D., Ark.), the driving force behind the investigation, wants to test Congressional opinion before deciding to push the proposal to a vote.

Representative Mills' basic idea is to rewrite the revenue act in such a way as to bring into the tax collector's net billions of dollars of income that the law now excuses from taxation. Experts for the committee believe taxable income could be increased by as much as $50 billion. At present rates, this would yield somewhere around $20 billion more a year in revenue.

But Representative Mills is not after extra revenue. His goal is to use the broader income base as a means of lowering existing income tax rates, holding total tax revenues at present levels.

Personal income tax rates could be dropped one-third, the committee was told this week by Joseph Pechman, fiscal economist on the staff of the Committee for Economic Development. This would mean dropping the lowest rate from the present 20% to 14%, and the top rate from 91% to 60%, with comparable reductions in all the other brackets.

Corporation taxes could be dropped from the present 52% to 42.5% on the same basis, William F. Hellmuth, professor of economics at the University of Wisconsin, told the committee.

Businessmen, economists, tax lawyers and key members of Congress have been arguing for years that the present high rate structure should be lowered in the interests of general economic health. But the method being studied by Representative Mills and the committee would be a painful one. It would mean depriving taxpayers of dozens of special deductions now written into the revenue act, such as tax-free status for income from state and local government bonds, deductions for interest on home mortgages and rapid depreciation on new plants and equipment.

The political difficulties of actually carrying out such a program are enormous. That's why the proposal may never get any further than the present hearings. But the idea in principle at least is getting the support of most of the academic economists and many of the tax lawyers and accountants who have been summoned to testify.

Here's how residential construction could be affected.

Interest costs deducted on personal income tax returns totaled $4.5 billion in 1956, and are substantially higher now. The loss in tax revenue is in excess of $1.2 billion a year, and most of this is due to interest on mortgages. As the law now stands, the government is in effect paying borrowers a 25% subsidy on the cost of mortgage money, and there's no doubt that this has made home ownership more attractive than it otherwise would be. Few economists recommend wiping out this special handling of interest costs, however.

Several suggest, instead, that homeowners be required to include an imputed rental income on their income tax return. The argument is that this would wipe out an inequity that now exists between homeowners and those who pay rent.

The "rental income" would not be actual income, of course, but it would have to be added to the income side of the tax return just the same, thus increasing the tax liability and further reducing the advantage of home ownership. Either elimination of the interest deduction, or the addition of an imputed rental income, would be bound to stir up opposition from homebuilders. It would make home ownership less attractive from a tax-benefit point of view.

The tax-free status of interest on state and local government bonds is severely criticized by Vance N. Kirby of Northwestern University Law School. He estimates that individuals hold $22.7 billion worth of such bonds and that $26.2 billion worth is held by private corporations. The tax loss to the Treasury is about $600 million a year, he told the committee.

If the provision were removed, interest rates on state and local bonds would rise, thus boosting over-all costs of public works projects.

The deduction amounts to an indirect subsidy to the governmental units that issue the bonds, Mr. Vance argues. But he criticizes it as "erratic and expensive." It does not save the state and local governments as much as it costs the federal government in tax loss, he adds.

Several witnesses will join Mr. Kirby in advocating removal of this benefit in the present law. They argue that if the federal government wants to do something to aid other governmental units in financing public works, the aid should take some direct form.

The committee is also taking a look at the system of allowances for depreciation of plant and equipment. Under liberalized regulations inserted in the Revenue Act of 1954, businesses and individuals were allowed to deduct some $21 billion from taxable income in 1958. This $21 billion is a major source of funds for new construction projects, particularly in retailing and manufacturing.

A more liberal depreciation policy has long been urged by businessmen and some economists as a method of stimulating economic growth. George Terborgh, director of research for the Machinery and Allied Products Institute, will testify during the hearings for this point of view. But even the existing depreciation allowances will be attacked by other witnesses because of the resulting tax loss.

Robert Eisner, Northwestern University economist, puts the tax loss from this source at $5 billion for 1958. The benefits that are supposed to result—encouragement of investment, promotion of growth and the like—he writes off as "doubtful and variable." He does not think, for example, that internal availability of funds greatly influences

Traction and mobility bring major economies to well-known paving firm

Save $50,000 investment — and $4 per hour

This Michigan Tractor Shovel—one of 11 owned by Texas Bitulithic Company, Dallas—has, *by itself*, saved a $50,000 investment *plus*, in most cases, $4 per operating hour.

It alone has replaced a three-unit fleet common to many paving operations. Namely, a 130-plus hp crawler formerly used to pull a big 10,000 lb, 24-30 ft strikeoff planer—*and* another 130 hp crawler and matching scraper used to supply and remove gravel ahead of the planer. "Duplication of these three machines, which were moved to another job, would have cost us $75,000," says L. A. Armstrong, Texas Bitulithic assistant secretary-treasurer. "Their operation would require one more man and $4 per hour more actual operating costs (not counting depreciation, etc)."

Instead, the $24,000, 133 hp, 26,500 lb Model 175A Michigan does both towing and gravel supply-removal jobs.

Torque converter smooths towing operation

On towing operation, Michigan dependability and tractive ability have probably been the most important factors. Machine has four-wheel-drive, weighs 26,500 lbs, so has no trouble pulling the big two-lane planer. Its torque converter drive has virtually eliminated wheel spin, so holes in the sub-grade are no longer a worry. Operator has excellent view of leveler blade, and Michigan's power steer gives the instant fingertip control so necessary to towing any planer. And the dependable Michigan has lost no assigned work-time—so Texas Bitulithic's paving crew has never needed to slow down due to insufficient crowning.

25 mph speeds gravel supply task

On gravel handling, mobility is probably the key factor in Michigan's success. For example, every time material piles high ahead of the planer, the Michigan operator simply stops his machine, detaches a drawbar pin, and drops the planer yoke. In a few minutes, excess material has been Michigan-handled: cast aside or truck-loaded. Similarly, when more material is needed, the 25 mph Michigan runs down the sub-grade to a break in the forms, scoops up a 2¾ yard load, and hurries back. Re-attachment to the big planer takes one man (the Michigan operator) only a few minutes; and planing continues.

Ten other Michigans do varied jobs for pipe, dirt, paving crews

Elsewhere, Texas Bitulithic Company continues to make good use of their *10 other Michigans* (all 80 hp, 1¼ yd Model 75A's). "We run 25 to 30 jobs at a time," explains Equipment Supt R. H. Arnold, "do $15,000,000 to $20,000,000 worth of earthmoving, bridge work, concrete and asphalt paving per year. We put one 75A on each major job . . . shuttle our other Michigans, under their own power, between two to five smaller jobs each. Tasks include hauling concrete from mixers to pour sites. Carrying pipe. Truck-loading sand, gravel and dirt. Leveling parking lots. And many, many others."

Michigan is the registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

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Benton Harbor 15, Michigan

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Canadian Clark, Ltd.
St. Thomas, Ontario

a business when it decides to make an investment. "Where profitable investment opportunities exist, modern corporations can raise the funds," he argues.

On balance, professional opinion as represented by the witnesses seems fairly evenly divided between those who think depreciation allowances should be curtailed and those who think they should be liberalized. With such a large chunk of tax revenue available, however, it is a tempting idea for those who want to broaden the tax base.

Tax provisions allowing corporations to deduct reseach and development costs from income will receive general approval from the witnesses assigned to the subject. Robert W. Cairns, director of research for Hercules Powder Co., and Charles R. Orem, Jr., Sylvania Electric Products Inc., defend the present system and urge that it be retained, or liberalized. There was no major attack on research and development deductions from other witnesses. This growing source of construction funds, at least, is not seriously questioned in any proposals now before the committee.

Lumbermen Eye Bigger Market

Inroads by competing materials are shaking the last drop of complacency out of the lumber industry. Lumbermen are taking a close look at a 10-year, $125-million program aimed at solidifying and enlarging the industry's role in construction.

The program was unveiled last week at the four-day annual convention in Washington of the National Lumber Manufacturers Association.

No alarms were sounded for 1960. Millmen, government officials and economists told the convention that construction volume is expected to continue strong through 1960, with demand for lumber expected to increase modestly.

No one, however, offered a guarantee that lumber could make any gains after 1960—or even hold its place in the market. Indeed, Julian H. Zimmerman, Federal Housing Administration commissioner, said almost the opposite.

He made it clear that no homebuyer and no government mortgage underwriting agency cares whether a house has one stick of wood in it. All the buyer, mortgage investor and mortgage insurer want is the best house obtainable for the fewest dollars, he said.

With that warning still sounding in their ears, the lumbermen were presented with the multimillion-dollar wood promotion campaign aimed at countering the threat of aluminum, steel, clay products, concrete and plastics.

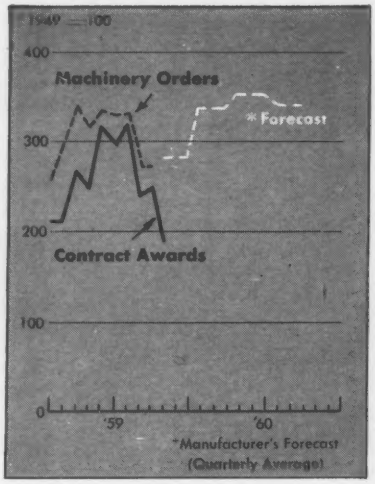
The proposed program would bear down heavily on research, both in product development and in distribution and construction economy. It would also direct educational advertising at the prospective buyer, the designer, community building official, lumber dealer and builder.

The campaign would hit at five promotional and development areas:

- Technical field service to provide all builders, architects, engineers, and school and community leaders with the latest advances in wood technology.
- Product and market research to find new ways of using wood and developing new wood products.
- Total industry use of a special trademark to identify wood products of those participating in the program.
- An advertising campaign in all mediums, including television and top consumer and trade magazines.
- A combined merchandising and product publicity program for use by builders, lumber wholesalers and retailers.

Selling the campaign won't be easy. It would be paid for by 1,200 member companies of NLMA—producers of half the nation's lumber—and 49,000 other producers, who account for the remainder.

Financing would require an assessment of $1 per thousand board feet to produce the $12.5 million needed each year. That compares with the present assessment of 10 cents per thousand board feet, which brings in $1.3 million annually for promotion purposes.



Machinery Orders Set A September Record

Orders for construction machinery during September set a new record for the month, even though holding at the August dollar volume.

The New Orders Index for Construction and Mining Machinery was at 270, based on 1949 = 100. That's 19% more than September 1958, but down 20% from the 1959 peak set in May, according to the McGraw-Hill Economics Department Index.

The index is based on reports from a sample of equipment manufacturers.

For the first nine months of 1959, the index averages 304, up 29% over the 1958 period and 21% above the previous record set in 1956.

The trend in contractors' purchases of new equipment closely follows the trend of their new business. The Contract Awards Index in September climbed to 245, but skidded to 190 in October. The Contract Awards Index is also based on 1949 = 100.

British Contractors Boost Overseas Business

British construction contractors are stepping up their foreign competitive efforts.

Construction put in place outside Great Britain totaled $336 million in the 12 months ending in March of this year, according to Britain's Ministry of Works. That compares to $319.2 million in the previous fiscal period, ending March 1958.

New contracts, however, dropped $11.2 million to a total of $322 million. The dip in contracts was attributed to the recession experienced in some parts of the world. The lower figure was still above the 1956-57 total by $36.4 million.

The backlog of work as of March was at a record $347.2 million. That topped the previous record of a year earlier by $5.6 million.

Biggest boost in new contracts and the value of work completed came in Iran and Brazil, countries where U.S. construction companies have been extremely active.

In the 1958-59 period, British contractors boosted their new contracts volume in Brazil $21 million above the 1957-58 period.

600 hp Michigan replaces tandem-pushers on Hugh Steele Inc. highway job

Earns $126 extra per hour

"Earning their keep!?! Why, in a year, I could run them into the middle of the Chattahoochee River, and still walk away with a profit!"

Hugh Steele is talking about three rubber-tired Michigan Dozers that are making their mark in big, bold dollar signs all around his 18.1 mile highway contract near Ashburn, Georgia.

Biggest profit producer is in the cut. It's a *600 hp* Michigan Model 480! This big rig started out in demonstration against two 190-hp crawlers push-loading in tandem. The results were so one-sided Mr. Steele wouldn't let Atlanta distributor Stith Equipment Co. take the Michigan off his job.

Scales, stop watch tell the story: 14 more loads per hour

With scales and stop watches, this production story was recorded:

Material	Model 480 Sandy clay (3000 lbs/yd)	Tandem Crawlers Sandy clay (3000 lbs/yd)
Scraper capacity (each of 12 machines)	25 yds heaped	25 yds heaped
Average load time	30 seconds	44 seconds
Pusher cycle time	60 seconds	84 seconds
Average payload, scale weighed	60,000 lbs	48,600 lbs
Average pay yds	20.0	16.2
Scraper loads per 50-min hr.	50.0	35.7
Scraper output per 50-min hr.	1,000.0 yds	578.3 yds

In terms of cold cash, these figures mean simply that the Michigan *earns more dollars per hour*. A lot more! In 30c dirt, its *extra earnings* average *$126 per hour* over tandem pushers, according to Mr. Steele.

Faster pushing nets bigger pay loads

Watch a few push-loading cycles and you'll see why. The Model 480 has half again as much power as the two crawler-pushers *combined*. It backs up faster than crawlers, and being one machine instead of two, naturally positions faster (24 seconds faster, on the average, on this job). It pushes faster (at speeds up to 5 mph), which both reduces load time and keeps the dirt more "alive." Result: higher, tighter, bigger loads—and more of them.

Other Michigans save time on fill-compaction assignment

Just as the big Model 480 is producing profits in the cut, so too are two other Michigan Dozers saving money for Owner Steele on the fill. These units are both 262 hp Model 280's. They are spreading fill and compacting . . . achieving specified 95% Proctor in two to three high-speed (7½ mph) passes.

Speed scattered odd jobs

And that's not all. Go-anywhere 28 mph mobility allows the Michigans to sneak away from main assignments to tackle emergency jobs. Towing disabled vehicles, for example. Back-filling around culverts. Building up low spots in haul roads.

These are just a few of the odd jobs. *But the real advantage of Michigan Dozers,* Mr. Steel says, *is their ability to outperform crawlers on many production jobs too.* And do it day after day, with dependability equal to that of Michigan Tractor Shovels. There are four size Dozers to choose from: 162, 262, 375, and 600 hp. Your Michigan Distributor will be glad to show you one in action so you can judge its advantages for yourself.

Michigan is the registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

CLARK EQUIPMENT

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Benton Harbor 16, Michigan

In Canada:
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St. Thomas, Ontario

Collective Bargaining Is in Trouble

- **Despite the Supreme Court's decision in the steel case, the basic problems remain unanswered.**
- **Congress is sure to examine the crisis in labor relaltions, but in a heated political atmosphere.**

The current revolution in labor-management relations can continue to run its course virtually unchecked, unless Congress steps in, as a result of the Supreme Court's steel decision.

The opinion handed down by the court leaves unanswered most of the basic questions raised by the emergency provisions of the Taft-Hartley Act. Regardless of the outcome of the injunction, the decision stands as an open invitation to a full-scale Congressional investigation of how to cope with the failures of free collective bargaining.

It is unlikely that Congress, particularly in an election year, can come up with a cure without looking more deeply into the causes. And if the present trends continue, the current war between labor and management will be moved with all its virulence from the bargaining tables to the floors of Congress. Administered pricing, management featherbedding and executive fringe benefits and compensation can no more escape the firing line than labor monopoly and union featherbedding.

The question the Supreme Court failed to answer, and the one that might at least have delayed all this, is whether the injunction provision is versatile and flexible enough to protect the public in major labor disputes.

As matters now stand, only two things are known:

- **The emergency provision of the law is constitutional.** Availability of an injunction, the court said, depends on the facts that surround a labor dispute. The facts must be determined judicially and that job, it said, is one for the courts alone to handle. The law cannot be accused of illegally giving administrative or executive powers to the courts, the court concluded.
- **A labor dispute that interrupts the flow of vital defense materials, at least to the extent that occurred in the steel strike, does "imperil" the "national safety" and is properly subject to a Taft-Hartley injunction.**

No one, however, can venture even a guess under the court's decision as to the circumstances under which a strike can have enough effect on the "national health" to justify federal intervention under the injunction clause. The court said it "need not resolve" the question of whether Congress intended to make the injunction available to situations affecting U.S. "economic health" or "general well-being."

Questions like these are already being raised: Where does the public stand if the steel strike resumes after the injunction expires and the present defense needs have been stockpiled? Will the law be of any help if the moratorium in aluminum ends before a steel settlement is reached, or if the copper strike drags on? Could the law be used if the public is pinched by major strikes next year in the aircraft and electrical equipment fields or if strikes occur when the auto, farm and construction machinery and rubber contracts expire in 1961?

Even if the steel dispute is settled before Congress reconvenes, questions such as these will remain. The court has had its say. Each subsequent case must be plotted on an unknown chart.

A further look at the Supreme Court's decision is not reassuring. Justices Frankfurter and Harlan sided with the majority, but said it would take some time for them to justify their action. Justice Douglas, the lone dissenter, accused the court of becoming a rubber stamp for the President. He argued that the emergency provision of the law is not even flexible enough to handle the steel dispute and said the courts are not empowered to frame a broad injunction that exceeds what is necessary to protect a "narrow" concept of public "health and safety."

New and repetitious proposals for changing the injunction provision have followed the court's decision.

Sen. George A. Smathers (D., Fla.) has suggested creation of a U.S. Court of Labor-Management Relations. The court would have jurisdiction over all national industries and would have the power, subject to no appeal, to settle labor disputes. Some opponents say this would lead to price controls.

Rep. Bruce Alger (R., Tex.) has introduced an antitrust bill for labor.

President Eisenhower says he will come up with his own recommendations if the steel strike starts again.

AFL-CIO's George Meany and Walter Reuther called last week for the "removal" of the Taft-Hartley injunction provision in order to balance the scales more evenly between labor and management.

While the pressure mounts for a change, water of another kind is flowing under the bridge, minimizing the chances of a one-sided or superficial solution. Congress in January is apt to find itself in an atmosphere of bitter labor-management recrimination.

By then, the railroad dispute over featherbedding and a roll-back in wages is expected to be in full bloom.

The AFL-CIO has already tied the steel and rail disputes together, calling the steelworkers the "shock troops" in the "present day war on organized labor by reactionary forces." The rail unions have dusted off the "clean hands" doctrine in an effort to counter management propaganda on the work rules issue. They are building up their charges of management featherbedding and executive milking of corporate tills at the expense of stockholders, workers and the public. This is the kind of argument that may appeal to others.

The opposing forces are preparing for a decisive battle.

Unions are increasing their strike funds and closing ranks. Labor and management are both making bigger use of public relations campaigns.

The auto workers and machinists unions have formed a collective bargaining alliance to protect and promote the interests of the aircraft, missile and related electronics workers they represent. Rail unions are coordinating their tactics. Members of the Association of American Railroads have come up with a strike insurance plan.

Few can doubt that a labor-management war of far-reaching consequences is on. The Supreme Court's steel decision indicates that, in the absence of voluntary peace formulas like Kaiser's, there is no sure, effective or practical way to stop it or to protect the public interest short of an appeal to Congress.

(*Labor continued p. 192*)

MICHIGAN SCRAPERS PREVENT SHUTDOWN

Two high-traction Model 210's work through truck-stopping mud, cut costs more than 50%

It was raining. Again. George Schultz Construction Co officials, Galt, Ontario, looked at the area around their crusher. A muddy mess. Trucks were bogging down so frequently the 2½ mile base course spreading job faced almost certain shutdown.

Then someone mentioned Michigan Scrapers. "Maybe these high-traction 19 yd rigs could continue work," he suggested. "Let's try them out." So contractors did.

Basically, operations were kept as before. Each of the two Michigans was crusher-loaded, and each hauled direct to the right-of-way. *But results were far different!* Soft footing on route from crusher to highway hardly slowed the big-tired (29.5-25) 28 mph rigs. Savings ran over 50% and the job was completed well-ahead of schedule. The Michigans had presented half a dozen important advantages . . .

- Their ability to go through mud eliminated a push-tractor.
- Their 19-yd capacity and high hauling speeds enabled the two scrapers to replace one 10 yd and six 6 yd dump trucks.

- Excellent spreading characteristics eliminated need for continual use of grader. Operator simply lowered cutting edge to within 4 or 5 inches of roadbed, opened apron, and ejected the gravel in a smooth, even "carpet."

- Rolling action of low-pressure tires, plus 45,800 lbs empty weight, reduced number of roller passes necessary for compaction.
- With two machines able to do job normally requiring seven haul units, costs tumbled. Fuel consumption was lowered, fewer operators needed. Michigans together, on typical one-mile one-way haul, placed 40 to 50 loads, 720 to 900 bank yards, every 8 hour shift.

- Versatility of Michigans—handling dirtmoving *and* base course—enabled contractors to do entire 2¼ mile road rebuilding job with the two Scrapers, a pusher, and three dozers. No other machines were needed.

Good experience with Michigan Tractor Shovels led to tryout of Scrapers

Naturally, the Schultz organization is enthusiastic about Michigan Scrapers—just as they *thought* they would be. Because a prime reason for buying Michigan Scrapers was the company's good experience with their two Michigan Tractor Shovels. The rugged dependability and all-around capacity for hard work of these units had convinced Schultz the Michigan name on a machine meant a machine that could "take it." *And, after all, the Michigan Scraper had the same all-Clark power train design proved so successful in 11,000 Michigan Tractor Shovels.*

Michigan Scrapers *should* produce major economies, reasoned Owner George Schultz—and they did! Both in hauling base course, and on production work. (On dirtmoving portion of this job, shown above, Michigans heaped 14 pay yds in 30 seconds—sometimes in as little as 15 seconds—completed typical 2700 ft cycles in 3½ minutes—1800 ft cycles in 2½ minutes—moved on the longer haul over 400 pay yards per 50-minute hour.)

Investigate for yourself. We'll be glad to demonstrate this 19 yd—or our 10½ yd—or our 29 yd Michigan Scraper Model *on your job*. Call us to arrange details.

Michigan is a registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division

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2401 Pipestone Road, Benton Harbor 22, Michigan

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Unions Argue Work Jurisdiction

The AFL-CIO Industrial Union Department last week virtually wrote off four years of peace-making efforts in the jurisdictional battle with craft unions over division of maintenance work.

Result: Construction industry labor-management efforts to promote the principle of maintenance by contract may have a rough road ahead.

Dissatisfaction of the industrial unions with present practice, plans and thinking was spelled out in a resolution on jurisdiction that was approved, over minor opposition, by some 400 delegates attending the AFL-CIO's industrial union convention in Washington, D. C.

Original convention plans were to mute any protests over the internal workings of the labor federation, while the convention—led by IUD President Walter Reuther—concentrated on organizing, bargaining and legislative goals. The plan was to make employers the first and only convention target.

Under pressure, however, from O. A. "Jack" Knight, president of the Oil, Chemical and Atomic Workers Union, the IUD served notice that the jurisdictional issue cannot be soft-pedaled.

Mr. Knight's union, which has already demonstrated an independence as strong as that of the building trades unions, has moved to the forefront of the job battle. The union's president complains that the Miami Agreement, devised in February 1958 as an IUD-Building Trades Department peace plan, would put half his members in the oil and chemical industries out of work.

Specifically, Mr. Knight claims that under the Miami Agreement all maintenance work in industrial plants his union has organized would be turned over to the building trades when such plants are shut down for repairs. His members, he charges, would get only "running maintenance work" according to AFL-CIO President George Meany's interpretation of the agreement.

With feelings in his union running high, Mr. Knight brought a resolution to the convention for a qualified endorsement only of the federation's peace-making plans. The principle of arbitration agreed on at the AFL-CIO convention in San Francisco in September was endorsed as necessary to labor unity and as feasible, but perpetuation of the Miami Agreement principles was rejected.

The resolution gives a revealing account of industrial union views on the merits, progress and failures of inter-union feuds and peace plans:

• **Miami Agreement**—"Does not provide for resolution of disputes . . . (lacks) clarity in the definition of running maintenance . . . (has no) terminal facilities . . . (is) at best a stopgap arrangement."

• **Local peace plans**—The Detroit, Youngstown and Connecticut jurisdictional peace pacts concluded by local building trades unions and some industrial unions are the "logical and reasonable answer to the work jurisdiction problem." (Further use of pacts such as these was officially discouraged at the last Building Trades Department convention until the Detroit plan "proves itself in actual practice.")

• **Metal Trades Department organizing**—The department "has no constitutional or moral right to continue its competition against former CIO unions." The problem is "yet to be solved."

• **No-raiding agreement**—"It is an open secret that this agreement is often disregarded."

• **Union boycotts of another union's products**—Such boycotts are "condemned as unethical and unwarranted." (A well-known example is the recent sheet metal workers' refusal on some jobs to install Burt Manufacturing Co. ventilating equipment made by members of the steelworkers union.)

• **Dual organizing campaigns**—Despite an ethical practices code, there "is no doubt that unethical practices in this area still continue."

Most leaders of the 68 industrial union affiliates supported the charges. Objections come from craft unions, such as the plumbers and electrical workers, which are represented in the department because of limited industrial union membership. They were swamped in a voice vote approving the resolution.

Sheet Metal Workers Sign Two-Year, 35-Cent Pact

A two-month strike of sheet metal workers employed by 25 Rhode Island firms in the Master Sheet Metal Workers and Composition Roofers Association of Rhode Island has ended with the signing of a two-year contract calling for a total wage increase of 35 cents an hour, payable in three installments.

Under the agreement, members of Local 17, Sheet Metal Workers' International Association, receive an immediate increase of 15 cents an hour, 10 cents more next May 1 and a final 10 cents on November 1, 1960. Contract expires June 1, 1961.

Union pay scale will move from $3.25 to $3.60 during the life of the contract.

Carpenters Settle

AGC signs master contract; sees problem still unsolved

A six-day carpenters' strike against members of the Northern and Central California Chapter of Associated General Contractors ended last week. AGC signed, without reservation, a master labor contract negotiated earlier by six other employer associations.

The sudden strike had halted a dozen projects in the counties of San Francisco, Alameda, San Mateo and Marin.

The AGC said it is not legally bound to the previously existing pattern of multi-association bargaining despite its acceptance of the current contract. "Attitudes of all parties during the final 30 months of the contract will determine what course will be taken in future negotiations," observed an AGC spokesman. He indicated that "a complete realignment of the local bargaining pattern" is "likely" to occur.

The bargaining troubles of the AGC came to a head last July when the association pulled out of the employer group that negotiated the master contract. Negotiations on the employer side, the AGC said, were dominated by homebuilders and other light construction groups.

Associations originally represented on the joint bargaining committee were: Peninsula General Contractors and Builders Association; Marin Builders Association; General Building Contractors Association of San Francisco; Associated Home Builders, Inc., of San Francisco; Associated Home Builders of the Greater East Bay; and the AGC.

AGC contended, before the spin-off, that its interests are sufficiently separate from those of the other negotiators to warrant a contract of its own. The carpenters claimed the AGC had bargained as one of the group for over 20 years and that the union was legally prohibited from engaging in individual negotiations with the AGC.

An attempted court test of the respective positions followed the pull-out. Both cases were thrown out. The court said it could find no legal agreement binding the AGC to the group committee and that the AGC plea for separate bargaining is for the National Labor Relations Board, not the court, to decide.

The AGC members have, however, been paying the master contract scale based on the 22½-cent hourly wage increase negotiated by the joint committee from which the AGC pulled out.

Total wage and fringe package under the contract is 68.2 cents.

Labor in Brief . . .

• **Seeks labor law revisions**—The Canadian Construction Association has renewed its request for an overhaul of the Ontario Labour Code. President J. Eric Harington says the law is "outmoded and inappropriate" for the construction industry and needs to be revised and updated. He also thinks the time has come to make labor accountable for its actions.

• **Employment down**—An unusually sharp decline of 92,000 occurred in construction industry employment last month. This put the industry's October level of employment at 2,950,000—well below the 1956 and 1957 levels.

• **Ask Rockefeller's help**—AFL-CIO leaders in New York have asked Gov. Nelson Rockefeller to support legislative proposals for a state-wide minimum wage of $1.50 an hour and for unemployment, workmen's compensation and disability benefits that equal two-thirds the average wages of covered workers. The state federation includes these among its top priority legislative demands in 1960.

• **Is severance pay the answer?**—The National Industrial Conference Board has come up with some timely information, in view of current strikes, that emphasizes labor's interest in job security: About half of America's manufacturing companies employing more than 1,000 persons have some type of severance pay arrangement for workers whose services are terminated by management.

• **Will enforce labor law**—Daniel L. O'Connor, Washington lawyer and former FBI agent, has joined the U.S. Labor Department to become enforcement chief of the anticorruption provisions of the new labor law. He will have a staff of more than 100 sleuths.

• **Patient won't be cured**—The National Right to Work Committee, which is critical of construction industry concessions in the new labor law, says the law "will prove inadequate in the long run." It calls the law only "a modest beginning in correcting the evils which are an extension of compulsory unionism."

Fabrication Clause Is Defended

Peter T. Schoemann, general president of the plumbers union, has served notice that his union has no intention of abandoning the fabrication clause in its labor contracts. In doing so, he has given some indication of what contractors may expect from other unions.

He says the clause falls within the hot-cargo exemption granted the construction industry in the new labor law; that it is legal, and that it will be defended "against legal attack from any quarter."

Under the clause, United Association and its locals have, says Mr. Schoemann, "traditionally required all pipe fabrication—that is all bending, cutting, fitting and welding—to be performed on the job site or else we permit off-site fabrication of pipe over a specified dimension—frequently over two inches in diameter—only if fabricated at building trades rates under an agreement with a local union of the United Association."

Such a clause escapes being killed by the new labor law only if it can be construed as one "relating to the contracting or subcontracting of work to be done at the site of the construction." Some contend the clause is now illegal because it covers work performed away from the job site.

Mr. Schoemann's defense of the clause suggests an argument that may be used by other unions to defend other types of off-site fabrication.

The new law's exemption, Mr. Schoemann says, "equally favors all unions wherever job-site work is farmed out for fabrication away from the job, whether it is carpentry or boilermaking or electrical work, or sheet metal work, or any other class or craft of construction. The principle and purpose remain the same."

Thread of Mr. Schoemann's argument is that there is no practical difference between work performed on site and fabrication off-site. The latter, he says, covers particular work tailored to particular needs of particular jobs and, unlike the manufacture of standard building materials furnished by suppliers, is intimately related to the work at the site.

This leads Mr. Schoemann to conclude that Congress did intend to protect building trades workers, as it has protected garment workers, against having the work they perform farmed out to nonunion or alien fabricators.

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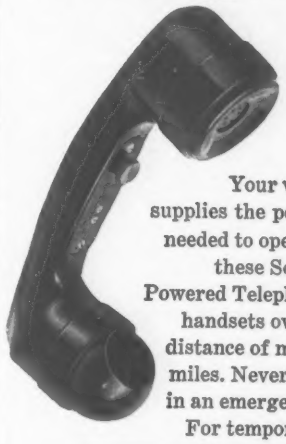

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OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: December 11, 1959

Reconditioning, Reshaping and Surface Treatment Route No. 1—South Road Between Kilometers 27 and 65

DIRECTORATE OF HIGHWAYS
MINISTRY OF COMMUNICATIONS AND PUBLIC WORKS
REPUBLIC OF HONDURAS
ADVERTISEMENT FOR BIDS
CONTRACT No. 502—P (DST)

Sealed Proposals for the above noted contract described herein will be received by the Director General of Highways at the Offices of the Ministry of Communications and Public Works, Tegucigalpa, D. C., Honduras, C. A., until 10:00 A.M. Honduras Time on December 11, 1959 and then publicly opened.

The work to be done under this Contract shall be commenced on the date specified in the Notice to Proceed, or such earlier date mutually agreed upon by the Ministry and the Contractor. All work under the Contract shall be completed within 240 calendar days after such date, and consists of furnishing all plant, labor, materials and equipment, and performing all work in strict accordance with the Specifications, Schedules and Drawings forming parts thereof, for the Reconditioning, Reshaping and Surface Treatment of the South Road, (Route No. 1), between Kilometers 27 and 65.

Proposals shall be submitted covering all the work on the South Road, (Route No. 1), between Kilometers 27 and 65 as delineated on the Unit Price Schedule Form.

The approximate quantities of the principal items of work are:

Reconditioning and Preparing Subgrade	38 LK
Select Material Base	42,000 CM
Two Course Surface Treatment	312,000 SM

Prospective bidders can obtain copies of the plans, specifications and contract documents for a fee of 50 Lempiras from the Office of the Director General of Highways, nancial Statement and Experience Questionnaire and a Plan and Equipment Questionnaire on form supplied by the Directorate of Tegucigalpa, Honduras. A Contractor's Fi-Highways will be required of all bidders. All proposals must be on the forms prescribed by the Directorate of Highways and must comply with the terms and conditions set forth in the Contract Documents.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of ten (10) percent of the total amount shown in the Proposal Form Unit Price Schedule in the form and manner specified in the Instruction to Bidders.

Individuals or firms doing business under ficitious names and all foreign corporations shall register with the Ministry of Communications and Public Works, Tegucigalpa, D. C., Honduras, C. A., before any proposals submitted by such corporations, individuals or firms will be considered.

Award of the above contract, if any award be made, will be to the lowest responsible bidder or bidders. The Government reserves the right to reject any and all proposals and further reserves the right to waive any informality in proposals received when such rejection or waiver is in the best interest of the Government.

The Government of Honduras has entered into a Loan Agreement with the International Bank for Reconstruction and Development for a loan in various currencies to finance the foreign exchange costs of a Highway Construction Project of which this contract will form a part. The Government of Honduras has also entered into a Loan Agreement with the Development Loan Fund of the United States Government for a loan to finance the local currency costs of the Project.

DIRECTOR GENERAL OF HIGHWAYS
Ing. Angel Casanova B.

October 19, 1959.

Bids: December 1, 1959

The Furnishing and Installing of Elevators and Moving Stairs at Lewiston and Tuscarora Power Plants

POWER AUTHORITY OF THE STATE OF NEW YORK
ADVERTISEMENT FOR PROPOSALS
SPECIFICATION NO. PA-N-23033
NIAGARA CONTRACT NO. NP-42

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the furnishing and installing of Elevators and Moving Stairs for the Lewiston Power Plant and the Tuscarora Power Plant in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Standard Time on the 1st day of December, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The work includes the design, manufacture, delivery, installation, and maintenance of fourteen elevators and four moving stairs and the associated equipment and services.

The work shall be completed on or before February 1, 1963.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars per initial set of contract documents and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

PA-N-23033

Bids: December 2, 1959

Narrows Bridge Piers

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattam, New York 35, N. Y., as follows:
Until 11 A.M. on Wednesday, December 2, 1959

For Narrows Bridge Contract No. NB-1B, Brooklyn Tower Pier. The bid must be accompanied by a deposit in the amount of $250,000.00

and

For Narrows Bridge Contract No. NB-1S, Staten Island Tower Pier. The bid must be accompanied by a deposit in the amount of $250,000.00.

Bidders may submit bids for either one or both of the above contracts.

Piers will be founded on open dredged caissons in The Narrows, New York Bay. Alternate design for Brooklyn pier provides shallow open dredged caisson supported on 36" diameter piles to rock.

Plans, specifications and contract documents may be purchased at the office of the Authority for $25.00, which will not be refunded.

Bids: December 15, 1959

Philadelphia, Penna. Procurement Department Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2:30 P.M. (E.S.T.) on Tuesday, December 15, 1959, and opened at that time, for Bid No. 2430—Work No. S-2563-F.

Main Relief Sewer in 22nd Street from Berks Street to a Point 20' N. of N.H.L. of Dauphin Street.

PRINCIPAL ITEMS OF WORK

Excavation in Tunnel	—15,975 cu. yds.
Excavation in Open Cut	— 1,500 cu. yds.
13'0" dia. Sewer in Tunnel	— 2,270 lin. ft.
Manholes	— 5
Overflow Chamber	

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 3, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1113 City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

Bids: November 26, 1959

Board of Education Bureau of Construction

Notice Re: Prequalification Forms For Contractors
APPROVED AS TO FORM
Acting Corp. Counsel

NOTICE IS HERBY GIVEN THAT
The Superintendent of Design, Construction and Physical Plant, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York, will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:
General construction, plumbing and drainage, (including heavy kitchen equipment), heating and ventilating, electrical work and lighting fixtures, new addition, modernization and conversion.
Public School 93, Queens.
Forest Avenue and Madison Street.
General construction, plumbing and drainage (including heavy kitchen equipment), heating and ventilating, electrical work and lighting fixtures, modernization and conversion.
Public School 37, The Bronx.
E. 145th Street, Willis and Brook Avenues.
Prequalification application forms will have to be secured from and must be submitted to the Superintendent of Design, Construction and Physical Plant, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, New York.
Bids when advertised, will be received from prequalified bidders only.
Time for submitting prequalification applications by contractors will expire on Thursday, November 26, 1959.
JOSEPH R. WEISS
Superintendent of Design,
Construction and Physical Plant.
Dated: November 4, 1959 Starting Monday, November 16, 1959 (Five Days).

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: December 15, 1959

Contract GWB-190.010

THE PORT OF NEW YORK AUTHORITY
GEORGE WASHINGTON BRIDGE
LOWER LEVEL EXPANSION
LIGHTING SECTION ROOMS

Sealed proposals for the construction of rooms for the lighting section of the New York City Transit Authority on the mezzanine level of the 168th Street-Broadway Station of the Eighth Avenue Subway line in New York City will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, December 15, 1959, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, November 19, 1959

Many contractors depend entirely upon the

OFFICIAL PROPOSAL COLUMNS

of

Engineering News-Record

for Opportunities to bid. They might not see your announcements if printed elsewhere

You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

The cost is only $2.40 a line per issue.

OFFICIAL PROPOSALS

Bids: December 12 & December 31, 1959

Supply of Equipment

Tenders are invited for the supply of all or any of the following equipment:

TENDER 9

(a) 132 kV Dual Circuit Power Line Transmission Steel Towers.
(b) 33 kV Dual Circuit Power Line Transmission Steel Structures.
(c) Steel Crossarms and accessories for 132 kV wood Pole single circuit power Transmission Line.

Specifications may be obtained on application in writing to the Purchasing Officer, Trinidad and Tobago Electricity Commission, P.O. Box 121, Port of Spain Trinidad, W.I. Closing Date for Tender 9, 12th December, 1959.

TENDER 10

(a) 2—200′ Non-Insulated Antenna Supporting Towers.

Specifications may be obtained as above. Closing date for Tender 10, 31st. December, 1959.

U. S. Government

United States Department of Commerce, Bureau of Public Roads, November 12, 1959, SEALED BIDS will be received at the office of the Inter-American Highway Division, Bureau of Public Roads, Room G-13C, General Services Building, 18th and F Street, N. W., Washington 25, D. C., until 2:00 p.m. E.S.T., December 15, 1959, for the construction of Honduras Project 56-1 (B) on the Inter-American Highway in Honduras. The project consists of the construction of 94 miles of crushed aggregate base and bituminous surface treatment and other work. Bids will be considered only from United States firms, Honduras firms, or other bonafide highway contracting firms doing business within the Inter-American countries of Guatemala, El Salvador, Nicaragua, Costa Rica or Panama which shall be principally owned by citizens of the country in which they do business and which shall have an acceptable record of performance on highway construction in their respective countries. Competency of bidders shall be indicated by information shown on the "Contractor's Financial Statement," "Experience Questionnaire," and "Plan and Equipment Questionnaire" which are to be completed by bidders and submitted with their bid. The approximate quantities of the major items of work are: 272,000 cubic meters crushed aggregate base, 25,500 cubic meters crushed aggregate for bituminous surface treatment, 400,000 gallons asphalt MC-1 for prime coat, 800,000 gallons asphalt for bituminous surface treatment.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5259) will be received at Fargo, North Dakota, until 10 a.m., CST, December 29, 1959, for furnishing labor and materials for Stage 04 additions to Jamestown Substation and shunt reactor installation for Fargo Substation, Transmission Division, North Dakota, Missouri River Basin Project. Location near Jamestown and Fargo, North Dakota. Principal items are Jamestown Substation (Schedule No 1) —63,000 pounds, furnishing and erecting steel structures; 2 breakers, installing 230,000 volt, 1,200 ampere, 5,000 mva power circuit breakers; 3 reactors, installing 13,200 volt, 5,000 kva, single phase, aircore, shunt reactor. Fargo Substation (Schedule No. 2)—Lump sum, Constructing concrete foundations; 1 breaker, installing 14,400 volt, 2,000 ampere, 1,500 mva power circuit breaker; 3 reactors, installing 13,200 volt, 5,000 kva, single phase, aircore, shunt reactor; and other work. Completion time 345 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 1993, Fargo, North Dakota; or Building 53, Denver Federal Center, Denver, Colorado. Floyd E. Dominy, Commissioner.

Sealed bids for construction of a Courthouse & Federal Office Building, Washington, Tillery and Adams Streets, Brooklyn, N. Y.,Project No. 30904, will be received until 2:00 p.m. EST on December 22, 1959; and then publicly opened. Bidding material may be obtained from the Business Service Center, General Services Administration, 250 Hudson Street, New York 13, N. Y.

OFFICIAL PROPOSALS

Bids: December 16, 1959

Construction of Sanitary Sewers

Notice is hereby given that sealed bids or proposals for furnishing all labor and materials for the construction of sanitary sewers in the Stafford area and Trout Creek area, including manholes and miscellaneous appurtenances in the Township of Tredyffrin, Chester County, Pennsylvania, will be received by TREDYFFRIN TOWNSHIP MUNICIPAL AUTHORITY at its office, 973 Old Lancaster Road, Berwyn, Tredyffrin Township, Chester County, Pennsylvania, up to 8:00 o'clock P.M., Easter Daylight Saving Time, the 16th day of December, A. D. 1959, at which time the proposals will be publicly opened and read aloud.

The sewer construction work will be divided into two (2) contracts designated as CONTRACT #1 (Strafford Area) and CONTRACT #2 (Trout Creek Area). Bidders may bid on any one contract, or on both contracts, but a separate proposal accompanied by a separate check must be submitted for each contract for which a bid is submitted.

The bid and other data submitted by bidders will form the basis for the negotiation of a unit price contract for the work.

General Conditions, Special Conditions, Proposal Forms and other contract documents and separate Plans and Specifications for the work may be obtained on or after the 10th day of November, A. D. 1959, at the office of the Tredyffrin Township Municipal Authority, 973 Old Lancaster Road, Berwyn, Pennsylvania, upon deposit of a check payable to the Authority in the amount of $40.00 for one set of Contract Plans and Specifications for the above contracts. If the Plans and Specifications are returned to the Engineer in good condition within 10 days after the opening of bids, the deposit will be refunded to each contractor submitting a proposal. If the documents are not returned to the Engineer within the time stated or if no bid is submitted, the deposit will be forfeited.

Bids shall be submitted in the form attached to the Specifications. A certified, bank cashier's or trust company treasurer's check for five percent (5%) of the base bid must accompany each bid as a guarantee that the bidder will enter into a contract in writing and will furnish bonds in the event that his bid is accepted. Should the successful bidder fail or refuse to execute a contract and furnish the required bond or bonds within the time specified in the Instructions to Bidders, the sum of five percent (5%) of the successful bid shall be considered as liquidated damages to the Authority for such failure or refusal, and the Authority may retain the certified check for said damages. The certified, bank cashier's or trust company treasurer's check is to be made payable to Tredyffrin Township Municipal Authority. No bid may be withdrawn for a period of 60 days after the date set for the opening thereof.

The successful bidder must furnish to the Authority at the time the contract is executed, a performance bond for not less than the full amount of the contract price, a maintenance bond for not less than ten percent (10%) of the contract price and a labor and materialmen's bond for not less than the full amount of the contract price, each in the form provided in the Contract Documents, and each with corporate surety licensed to conduct business in Pennsylvania satisfactory to the Authority.

Simultaneously therewith, the successful bidder must furnish to the Authority policies or certificates of insurance as required by Article 18 and 19 of the Special Conditions.

All proposals must be delivered to the Secretary of the said Authority at the Authority's office, 973 Old Lancaster Road, Berwyn, Chester County, Pennsylvania, on or before 16th day of December, A.D. 1959, at 8:00 P.M., Eastern Daylight Saving Time, marked "Proposal for Sanitary Sewers, Contract # , at which time and place the bids will be opened and publicly read.

Tredyffrin Township Municipal Authority reserves the right to waive any informality in, or to reject, any or all bids or items of bids thereof.

By order of the
TREDYFFRIN TOWNSHIP
MUNICIPAL AUTHORITY
Miles H. Sucher
Chairman
Richard E. Lander
Assistant Secretary
YERKES ENGINEERING CO.
Engineers
Bryn Mawr, Pa.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

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The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

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Subject to Agency Commission.

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Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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ADDRESS BOX NO. REPLIES TO: Box. No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Civil Engineer—presently registered or capable of becoming registered in Missouri; to join young expanding firm in the photogrammetric field. Some client contact, some field work and design. Excellent future for ambitious man. Furnish resume and salary requirements. P-2903, Engineering News-Record.

Superintendent Illinois building construction company, state education and experience in reply to P-2904, Engineering News-Record.

Sales Manager: Successful, high-rated, young, manufacturer of building construction machines, requires General Sales Manager with proven accomplishments, same capacity, same industry in past 10 years. Able to organize and develop hard-hitting sales. Progress to General Manager. Salary $15,000; more depending on increased sales and profits. Reply fully, Box 72, Cincinnati, 38, Ohio.

Top level Checker, capable of checking any type structures; such as bridges, (beam, girder, bascule, etc.), commercial buildings, large gantry cranes, etc. Must be willing to help with detailing (rarely) if necessary. One of the three top jobs in the Drafting Dept. Permanent. Opening due to retirement of employee with 32 years service. Solid Milwaukee, Wisconsin fabricator. P-2991, Engineering News-Record.

Wanted: Engineer for position as Technical Adviser having thorough knowledge and experience in development, construction and maintenance of Public Housing Projects. Must be familiar with preparation of plans and programs, and to act as liaison between Regional Public Housing Administration, Local Housing Authority, Architects and Contractors. Permanent position in the maintenance of entire local program in large southeastern city. Submit resume of qualifications and salary wanted with application. Civil engineering or architectural graduate preferred. P-2995, Engineering News-Record.

Public Works Engineer—Immediate Opportunity for a graduate Civil Engineer with California Registration and six years experience. Annual Salary $9,348—$11,364 depending on qualifications. Kern County Personnel Depart., Civic Center, Bakersfield, California.

Wanted: Superintendent for 1½ ton Standard Asphalt Plant. Salary. Full time position. One month's vacation winter months. Other benefits. Age: 30-45. Location: Connecticut. Must be able to handle entire operation & run tests etc. Present volume between 35 & 40,000 tons yearly. When replying state approximate weekly salary desired and past experience or education. Engineering degree preferred but not essential. P-3008, Engineering News-Record.

Engineers. Architectural, Structural, Heating & Ventilating engineers with 5 to 10 years' experience on all types of industrial plants. Positions are with prominent consulting Engineering Company in Eastern Pennsylvania. Please submit complete resume with salary requirements to P-2997, Engineering News-Record.

Sales Engineer—to represent expanding prestressed concrete co. in Iowa. Excellent opportunity for right man. Send complete resume and salary requirements. All replies held in strictest confidence. Prestressed Concrete of Iowa, Inc. Box 822, Iowa Falls, Iowa.

• POSITIONS VACANT

Wanted: Draftsmen and Estimators. Reinforcing steel and building materials. Permanent employment with midwestern firm. Please send resume. P-2984, Engineering News-Record.

Construction Superintendent—Experienced in Industrial and Public Buildings. Must be efficient and able to assume complete responsibility for Project. Send Qualifications and Salary desired. P-2971, Eng. News-Record.

Engineer-Estimator: Northwestern Ohio and Southern Michigan. Bridges, concrete, piling, excavating sewers. Ability to supervise work desirable, but not essential. Small organization. P-3078, Engineering News-Record.

Estimator—Quantity take-offs, heavy construction, water and sewage. Send resume of education, experience and references. Albany—Schenectady—Troy area. P-3062, Engineering News-Record.

Engineers (2) 10 yrs. min. exp.; planning and Design—Water & Sewerage Projects. Send complete resume, present salary, etc., prior to interview. P-3052, Engineering News-Record.

Sewer Superintendent. Good position for right man—must be able to organize and handle several crews, be familiar with well-pointing, rock blasting, steel & wood sheeting & shoring, tunneling, (not under air) heavy equipment, costs and help with estimating. Mid West location—immediate work. P-3047, Engineering News-Record.

Consulting Engineer's office in Rochester needs civil and sanitary engineers for responsible positions. Unlimited opportunity. P-3064, Engineering News-Record.

Estimator for general contractor—good pay + bonus—Must have good record & experience. Write full details. P-3073, Engineering News-Record.

• EMPLOYMENT SERVICE

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 48 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

• POSITIONS WANTED

General construction superintendent, over 30 years experience, all types and sizes of bridges, Marine and industrial foundations, one or large groups of structures, Caissons and cofferdams, fully qualified to supervise and train foremen and superintendents all crafts, plan and expedite job, set up cost systems, co-ordinate job with subs, etc. Available at once for interview, no degree, Mobile can relocate. PW-2961, Engineering News-Record.

Wanted: Administrative Position. Experienced Government Contracts, specifications; private contracts and local codes. Responsibility administrative direction, estimating, sub-contracts, securing prices and materials, stock and material control, preparing varied schedules applicable to above of M.E. nature for General Contractor. Past two years General Manager leading manufacturer's distributor Air Conditioning and Refrigeration including Sheet Metal Department. Varied field experience—Mechanical Engineering. Member SAME & RSES. Available 60 days. PW-2967, Engineering News-Record.

• POSITIONS WANTED

Superintendent in steel const. bridges—tunnel and tank fabrication experience. Available anytime—present job stalemated. PW-3003, Engineering News-Record.

Graduate B.S.C.E. with 10 years experience in most phases of reinforced and structural steel erection including all types of municipal bldgs, flood control work and towers. Past 3 years as sub-contractor on same. Desire position in Calif. area near Los Angeles or San Francisco. Age 35, PW-2992, Engineering News-Record.

Civil Engineer, Construction executive, Canadian, 41, thirteen years Latin American experience, available on short notice for local or foreign assignment. Resume on request. PW-3013, Engineering News-Record.

Civil Engineer—Danish—Age 30—married, with 8 years of experience in U.S.A. and North Africa as a Highway Engineer and Designer with leading companies. Languages: English, French, Danish, some German and Arabic. Resume on request. PW-2978, Engineering News-Record.

Sanitary Engineer with excellent health and 37 years broad experience in all phases of sanitary engineering will be available after Feb. 1, 1960. Can train personnel and handle projects from inception to finish. PW-2980, Engineering News-Record.

Prestress Plant Manager. Age 40. Broad knowledge of plant construction and concrete mix design; estimating, promotion, procurement, production, quality control, material handling, delivery and erection. Has set up and developed large temporary and permanent prestressing plants. Interested in permanent connection. Prefer Northeast—Mid-Atlantic area. PW-3017, Engineering News-Record.

(Continued on page 198)

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS

TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.

MR. EMPLOYER, won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.

MR. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section.

We make this suggestion in a spirit of helpful cooperation between employers and employees.

This section will be the more useful to all as a result of this consideration.

Classified Advertising Division

McGRAW-HILL PUBLISHING CO., INC.

330 West 42nd St., New York 36, N. Y.

UNUSUAL OPPORTUNITY

For experienced engineers who have reached a point where they want to find a job with greater challenge, scope, and variety.

The Field Promotion Department of the Douglas Fir Plywood Association has openings for 19 men trained and experienced in these fields: structural and agricultural engineering; architecture; industrial design; and forest products. Openings exist in all areas, so relocation will be at a minimum.

REQUIREMENTS: Age 27 to 37, college degree or equivalent, willingness to promote fir plywood vigorously and effectively through personal calls on professional specifiers and major users. Travel is reasonable.

SALARY: Starting, commensurate with qualifications and present earnings; advancement based solely on ability and accomplishments.

IF YOU ARE INTERESTED in creating a career in the fastest growing industry in the building materials field, send a resume, with full details on your background, to:

FIELD PROMOTION DIRECTOR

Douglas Fir Plywood Association

TACOMA 2, WASHINGTON

MANAGER

Metals Production & Construction

Challenging and rewarding key management post on permanent staff of progressive company in cosmopolitan Midwest city.

Position supervises all design, estimating and field construction of architectural metal. Our man must have solid supervisory management experience in the construction field with five years or more on galvanized and hot and cold rolled steel. Stainless and aluminum know-how helpful. Salary plus liberal bonus and fringes will yield in $12,000 range to start. From there the right man can soar in achievement and reward.

Are you the one? Send complete resume which can tell us, including education, specific experience and company associations, accomplishments and past earnings. Strictest confidence observed. Our people know of this ad.

P-3072 Engineering News-Record

Class. Adv. Div.,
P. O. Box 12, N. Y. 36, N. Y.

ENGINEERS

To work in the expanding Construction Engineering Division of a multiplant national packaging company located in Chicago. This division is responsible for all new construction as well as major remodeling to present facilities, located throughout the United States and Canada.

Applicants must have a Civil Engineering Degree and have experience in developing building designs and layouts for new or remodeled industrial plants and research laboratories. Major industrial experience should be in the areas of structures and soils.

Please send resume. All replies confidential.

J. H. SAMPSON

CONTINENTAL CAN CO.

7600 S. Racine Ave. Chicago 20, Ill.

ESTIMATOR

Building Division wants estimator experienced in all phases of building construction.

Send complete resume to

PERINI CORPORATION
73 Mt. Wayte Avenue, Framingham, Mass.
Attention: E. N. Ziner

MANAGER

Engineering, Contracting Company, well financed, good reputation, needs general manager. Good opportunity available for a man experienced in industrial, petrochemical and refinery engineering and construction. All replies held in confidence. Submit resume to P. O. Box 2983, Houston 1, Texas.

SANITARY ENGINEER

Capable or responsible charge of investigations, reports and design for growing consulting sanitary engineering firm. Minimum of ten years' experience. Salary fully commensurate with qualifications. Excellent opportunity for advancement. Boston location. Complete resume in confidence.

P-3028, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

SALES ENGINEER

RUBBER PAVING PRODUCTS

Expanding program requires manager to coordinate activities in promoting sales of Rubber Paving Products. Need aggressive salesman experienced in paving industry, asphalt, concrete, road making machinery, contracting for material and equipment, or similar background. Excellent opportunity with progressive Xylos Division. Attractive salary and employee benefits.

Write D. C. Shirey

FIRESTONE TIRE & RUBBER COMPANY

1200 Firestone Parkway Akron 17, Ohio

WANTED RECRUITER

Travel to interview and select workers for offshore construction project. Must be able to judge applicants ability in their crafts.

Salary—commensurate with ability, plus vacation, sick leave, and hospitalization insurance.

Only complete resume sent to **P-2989**, Engineering News-Record, Class. Ad Div., P. O. Box 12, N. Y. 36, N. Y., will be considered.

A GENERAL CONSTRUCTION

ESTIMATOR

Fully experienced estimator on competitive bidding. Splendid opportunity with one of Pittsburgh's leading construction firms. Profit sharing and retirement plan. Send complete resume of experience and qualifications.

P-3033, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

HIGHWAY MATERIALS & RESEARCH ENGINEER

Must have at least ten years responsible experience in this field. Middle East Location. Minimum assignment one year. Send detailed resume of qualifications, present salary and photograph to

P-3064, Engineering News Record
Class. Adv. Div., P.O. Box 12, New York 36, N. Y.

Construction Superintendent Wanted

—under 45—experienced in foundations, pile driving, bridges, concrete, including form work and industrial construction, no buildings. Permanent position, the Middlewest, with large, heavy contractor. Most unusual opportunity for suitable man. Please state age, education, experience outline and salary wanted.

P-3030, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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BOX NUMBERS . . .

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

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Our expanding program of technical and sales development has created permanent openings for experienced engineers, designers, and draftsmen.

Reply in confidence to:

Industrial Relations Manager
Construction Equipment Division
Blaw-Knox Company
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continues to expand and offers permanent opportunities to designers qualified by experience, and who have continued interest, in design and or checking in:

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as applicable in the design of Steel Plants • Blast Furnaces • Open Hearths Sintering Plants • Oil Refineries • Chemical Plants and Heavy Industry.

Send detailed resume and photo to

G. VICTOR HOPKINS

ARTHUR G. McKEE & CO.

2300 Chester Ave., Cleveland 1, Ohio

• POSITIONS WANTED
(Continued from page 196)

Project. Engr.—Supt.—Hvy. Const., C. E. linguist, 47, married, 25 yrs. exp field & office, est. to proj. compl., plants, hwys., R.R., bridges, etc. on 4 continents seeks resp. pos. o'seas; pref. S. Am.; S or W US. PW-3004, Engineering News-Record.

General Superintendent, 25 years experience, Industrial, Public, and Commercial buildings. Includes all phases of construction. Estimating, organizing, completions, negotiations for extras etc. Minimum salary $15,000.00. PW-2925, Engineering News-Record.

Construction Engineer—C. E.—Estimator— Co-ordinator 12 years experience. Commercial and Industrial Construction. Experienced with jobs for A.E.C. Corps of Engineers. Presently employed but willing to relocate. PW-2941, Engineering News-Record.

Combination Estimator-Construction. Available January. Advance planning to final bids; contracts negotiations. 18 yrs. private and gov't. experience. 8 yrs. Mediterranean area. PW-2912, Engineering News-Record.

Executive, broad experience in all phases of Building and Heavy Construction, seeks contacts with large volume contractors requiring top man to assume full responsibility. C. O. Sutherland, 47 Rich Avenue, Mount Vernon, N.Y. Telephone MO 4-7927.

Analyst-Engineer: Experienced estimates, costs, budgets, forecasts on steam generating, chemical-metallurgical, foundry, heavy industrial plant construction and operations; special studies investments, litigation; background financial-securities analysis; present salary, $10,600. PW-3071, Engineering News-Record.

Project Management, Contract Negotiation and Administration, 20 years exp. heavy-construction, U. S. and O. S. PW-3054, Engineering News-Record.

Project Engineer—Power plant, heavy and building construction. Age 32. Have worked 10 years for constructors, contractors and architect-engineers. Ambitious, will accept any location or invest in company. Graduate civil engineer. PW-3074, Engineering News-Record.

Registered Civil Engineer—Registered Land Surveyor, 32, experienced in land development. Location open. PW-3083, Engineering News-Record.

Graduate Civil Engineer—age 27—5 years experience—married. Desires field position with General Contractor. Experience with General Contractor on airport construction. Also experienced in highway construction. PW-3079, Engineering News-Record.

Project Manager or general superintendent, fully experienced in all phases of heavy construction, bridges, cofferdams, caissons, all types pile. Mass rock and earth excavation, throughways, railroad construction. Availability—two weeks. Will relocate. Q. L. (Blackie) Ballard, 5120 Indiana St., South Charleston, West Va. Phone, Poplar 8-1058.

Foreign Expansion—Construction manager or general superintendent for process plant, refinery, or heavy construction projects. Broad experience in organization, administration, and promotional development. Fluent Spanish. Desires to associate with company planning expansion into foreign field or having progressive outlook toward foreign work. Top assignment only. PW-3070, Engineering News-Record.

Manager-Engineer, BSCE, Age 51. Presently employed as general manager of company engaged in engineering contracts, sewer and water lines, treatment plants, etc. Other experience includes industrial buildings, heavy concrete structures, road work, paving, land development and working with small and large (4,000) numbers of employees as a leader. Can handle company from administrative through estimating, planning of work and supervision of jobs. Having been both employer and employee know thinking of both, also know heavy equipment and how to use same, and above all know value of money. Clean personal habits, honest and dependable with initiative and ability to think, make decisions and follow through. Salary in middle five figures with bonus. Prefer Southeast but will consider other locations. PW-3040, Engineering News-Record.

Civil Engineer, MSCE-Hyd., registered, 20 years varied design and field experience in USA, Europe and South America, fluent Spanish, seeks foreign or domestic assignment. PW-3091, Engineering News-Record.

Constr. Superintendent Steel & Concr.— Heavy constr. bridges, piers, Powerhouse, tanks. Mechanical and structural. 25 years experience. Will travel. Available now. PW-3065, Engineering News-Record.

• POSITIONS WANTED

Construction Executive: Top level only. 23 years experience all phases General Contracting, Gen. Supt., Project Eng., Cost Eng. & Purchasing on Highway & Heavy Industrial. Married; well educated with ability to handle complete projects estimate to closing. PW-3089, Engineering News-Record.

Construction Engineer—Project Manager. B.S.C.E. Extensive experience large U. S. and foreign projects; complete charge joint-ventures; thorough in documentation and processing claims. PW-3082, Engineering News-Record.

Graduate civil (41) ready to assume duties of chief engineer for small to medium size general contractor. Thoroughly experienced all phases selling, estimating, purchasing, field supervision & structural design. Available 4 weeks. PW-3061, Engineering News-Record.

• POSITIONS WANTED

Construction Supt. General Construction. PW-8896, Engineering News-Record.

Construction Supt. and Civil Engineer age 37. 10 years construction experience in all phases and administration. 5 years design experience. Have Cessna 195 plane and will travel. PW-3048, Engineering News-Record.

BSCE 1951, N.Y.S. PE 8 years experience highway and airport construction. Desires position with engineer or contractor. PW-3085, Engineering News-Record.

• PART TIME WORK WANTED

Contractor's Engineer—graduate C.E. li-censed. Heavy construction, buildings, missile projects. Wide experience in preparation and processing of construction claims. Desires part time work with contractor. PTWW-3087, Engineering News-Record.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

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CONSTRUCTION COMPANY

with $1¼ million TAX LOSS.

Assets (good conditioned equipment) equal liabilities with owner's guarantee of liability limit. Now operating in Florida in Engineering Construction, sewer and water lines and treatment plants.

Manager-Engineer, licensed in South Florida, wishes to bring his option to purchase company and other assets into merger with another company reasonably assured of profitable 1960 business and wanting to set up operations in Florida. Available about January 1st, but can start bidding for work prior to then.

No shoe-string deals, please, as this will require approximately $100,000 to purchase assets and have sufficient operating capital left. Original investment protected by equipment value, etc., plus 1957 and 1958 tax loss benefits if merging company has anticipated 1960 offsetting profits.

Respondents please submit brief outline of business and financial status after which will be furnished a brochure of this company and reasons for losses.

BO-3031, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• BUSINESS OPPORTUNITY

Exclusive Franchise Offered To Professional Engineer. Proven money-making home inspection consulting service in competitive New York-New Jersey area, has received tremendous national publicity. New York Engineering firm founder now offers franchises in other metropolitan-suburban areas. Professional, graduate engineering background required. Little capital needed. Tell previous experience in first letter. Strictest confidence. BO-1624, Engineering News-Record. Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

DON'T FORGET

the box number when answering advertisements. It is the only way we can identify the advertiser to whom you are writing.

"ANOTHER THORP SALE"

ATTENTION
TUNNELING & HEAVY EQUIPMENT CONTRACTORS
BIG 2-DAY AUCTION
of the
MOLE CONSTRUCTORS
Fleet St. & Talbot Ave.—Rankin, Pennsylvania
(Rankin is a Suburb of Pittsburgh)
THURS., DECEMBER 3, 1959
&
FRI., DECEMBER 4, 1959

FOR COMPLETE DETAILS & DESCRIPTIVE CIRCULAR, WRITE, WIRE OR CALL MR. SAM LUCIANO, RANKIN, PENNSYLVANIA, OR THORP SALES CORPORATION.

The following is a partial listing which will be sold on the first day:
Light Power Equipment, Pumps, Saws, Other Items.

The second day will include the following:
Loaders & Cranes, Compressors, Concrete Equipment, Trucks—Trailers—Station Wagons, Locomotives—Rail & Tunnel Equipment, Pipe.

ON THE SPOT CREDIT AVAILABLE TO BUYERS—TERMS: ONE-THIRD DOWN, BAL. IN EQUAL MONTHLY PAYMENTS UP TO 24 MONTHS.

Sale Checked by
THORP SALES CORPORATION
Home Office: Thorp, Wisconsin

ENGINEERS—why pay more???

Chesterman metallic tapes leather case linen line with eight coper wires—10ths or 12ths
50 ft size @ $ 7.95 ea.
100 ft " @ $12.50 ea.
Satisfaction guaranteed
Ask about our surplus new tapes.
B. G. REILLY CO.
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WANTED

Forms for approximately 25 to 30 lineal feet of 4' ID, 5' OD concrete pipe forms.

W-3034, Engineering News-Record
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K-595, 140' BOOM & JIB
CAT. D17000 ENGINE

50 TON AMER. DIESEL LOCOMOTIVE CRANE. 1946
30 TON BROWNING DIESEL LOCOMOTIVE CRANE
44 TON GEN. ELEC. DIESEL ELEC. LOCO.
25 TON WHITCOMB DIESEL ELEC. LOCO.
60 TON MANITOWOC 3900 CRANE
AMERICAN #140 3D DIESEL HOIST
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Also Other Constr. & Ry. Equip.

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Scrapers—4 and 6 wheel Bottom Dumps—late model TC 12 Crawler Tractor

Low cash price for pre-winter clearance.
EXCEPTIONAL VALUES
All offered subject to prior sale or disposition.
Details and prices call or write:

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EUCLIDS: Rear, Bottom and Scrapers
9W Bucyrus-Erie Dragline, 8½ yd.
5W Bucyrus-Erie Dragline, 5 yd.
200W Bucyrus-Erie Dragline, 6 yd.
170B Bucyrus-Erie Shovel, 6½ yd.
120B Bucyrus-Erie Shovel, 5 yd.
54B Bucyrus-Erie Shovel, 2½ yd.
38B Bucyrus-Erie Shovel, 1½ yd.
80D Northwest Shovel, 2½ yd.
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3000 Manitowoc Dragline, 1¾ yd.
2400 Lima Dragline, 6 yd.
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SHOVELS—DRAGLINES—CRANES
(All sizes, makes, Crawler and walking type)

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Construction Equipment
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1360 l. ft. 15" x 19" dual purpose airport concrete forms (10' long) with (4) double stakes pockets single wedge.

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Steel Forms for Tunnel or Culvert

Manufactured by Blaw-Knox Company

2—Collapsible inside forms 40' long x 30' wide x 15' high, curved top, for single tube
4—Exterior forms 40' long x 16' high

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2—Exterior forms 40' long x 16' high
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Complete — LIKE NEW

Located — Connecticut

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A complete line of Engineering Instruments and equipment for field or office. Write for catalog NRL 911.

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Manufacturers of Transits and Levels
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2 yard Front End Loaders
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Urban Renewal Pays Off

FEW CITIES IN THE U.S. can boast truthfully that they have no need for improvements. And there are few cities, if any, so rundown that the outlook is hopeless, that rehabilitation is not worthwhile. Almost every city can profit from the experiences of Pittsburgh in its substantial renaissance.

Pittsburgh's fight to free itself from decay and obsolescence and to fit itself to the future is recounted in this issue (p. 55). The list of accomplishments to date is impressive. Pittsburghers have a right to be proud of their accomplishments.

But when a program, such as Pittsburgh's, costs many millions of dollars, the pay-off has to be more than just a feeling of pride. And for Pittsburgh, the rewards seem certain to be at least commensurate with the expenditures.

In the first place, the city already has become a much more pleasant place in which to live and work. Secondly, it is an attractive place to visit and will become more a tourist and convention center when facilities such as the public auditorium and new hotel, now under construction, are completed.

Businesses now in the Pittsburgh area find it profitable to remain there. And it is now much easier to attract new ones. To capitalize on this, the area's leaders have formed a Pittsburgh Progress General Committee to sponsor a series of attention-drawing events. Pittsburgh's progress will be held up for the whole world to see. The pay-off should be healthy growth and prosperity.

What Pittsburgh has done, other cities can do.

First, there must be men of action to start the ball rolling. Next, an organization of businessmen and civic and political leaders (comparable to the Allegheny Conference on Community Development) is needed to pick it up and run with it—to develop and advance a unified program for the region. Such a group should be prepared to go all the way, to see that the various parts of the program are implemented systematically. As far as possible, citizens' committees should be set up to work on the specific tasks of redevelopment.

Above all, the program needs determined leadership. In this regard Robert Moses, New York City's construction coordinator, in a strong speech last week, which he titled "The Critics Build Nothing," told the New York Building Congress: "Give us respected leadership that will breathe confidence, not dismay, into the people, and we will rebuild the city. . . Minorities should not be allowed to dictate the chore of clearing up the slums. . . Those who have large objectives simply can't brood over their enemies. . ."

Finally, the program should offer something for everyone: There should be cultural and entertainment benefits as well as commercial gains in the offing. And popular projects should be given priority to arouse widespread enthusiasm. Once the program is under way, its momentum will move it on to the less popular but necessary projects.

The way to improve things in a democracy is to arouse public support. Abraham Lincoln may have said it best when he declared, "Public sentiment is everything. With public sentiment, nothing can fail; without it nothing can succeed."

Pittsburgh progress is an accomplished fact. And it is more: It is the precedent all America needs to prove that any city worth its salt can find the way to rebuild, to fit itself to the future.

New Engineering Challenge

EVEN IN THESE DAYS of astronomical government budgets, $1 billion is a lot of money. Yet, that's what the Bureau of Public Roads estimates it will cost to raise the minimum vertical clearance of Interstate Highway bridges from 14 ft to 17 ft to meet defense needs. If some way can't be found to avoid this increase, at least some means should be devised to reduce the added cost to the absolute minimum.

The higher clearance was requested by the Department of Defense to permit transportation of intercontinental ballistic missiles by highway (ENR Nov. 12, p. 25). The added height may be neither necessary nor desirable for civilian traffic. Furthermore, the possibility that future missiles may be much smaller should be considered.

It is understood that the Department of Defense plans to limit the number of bridges providing 17-ft vertical clearance to the minimum essential for defense needs. This would be helpful to begin with.

But if there is no practical alternative to generally higher bridges, highway engineers have the responsibility of gaining the added vertical clearance at as low a cost as possible.

In those cases where the increase will be as much as 3 ft, a re-examination of the economics of grade elimination and bridge construction may be necessary. Answers will be needed to questions such as these:

Should there be fewer grade-elimination crossings? Should steeper grades be used near bridges? Should bridges be built with fewer and longer spans? Can higher abutments, wing walls and piers be constructed with little or no increase in cost? Would prestressing be helpful?

Here is a challenge to engineers: There already are enough financial difficulties confronting the Interstate highway program. More design ingenuity is needed to stretch the highway dollar to keep this new development from curtailing the program.